

IMPORTANT INFO – For wiring pinout of position sensor jump to page 7

The 1.6 8V HDI engine is fitted to vehicles from 2010 to 2016 and comes with three different power options. There are 75 BHP and 92 BHP models which both use the same injectors, turbo and ECU. These come fitted with a Bosch EDC17C10 ECU and a Mitsubishi TD02 waste gated turbo charger with a electronic position sensor.

The 1.6 BlueHDI 120 engine is almost identical and uses a much better GTD1244VZ VNT Turbo. As the engine is the same it's easy to upgrade the turbo on the 75 and 92 BHP model to use the turbo from the 120 BHP 1.6 adblue model. The exhaust manifold is the same, and everything else is 'almost' the same so it's relatively easy to do.

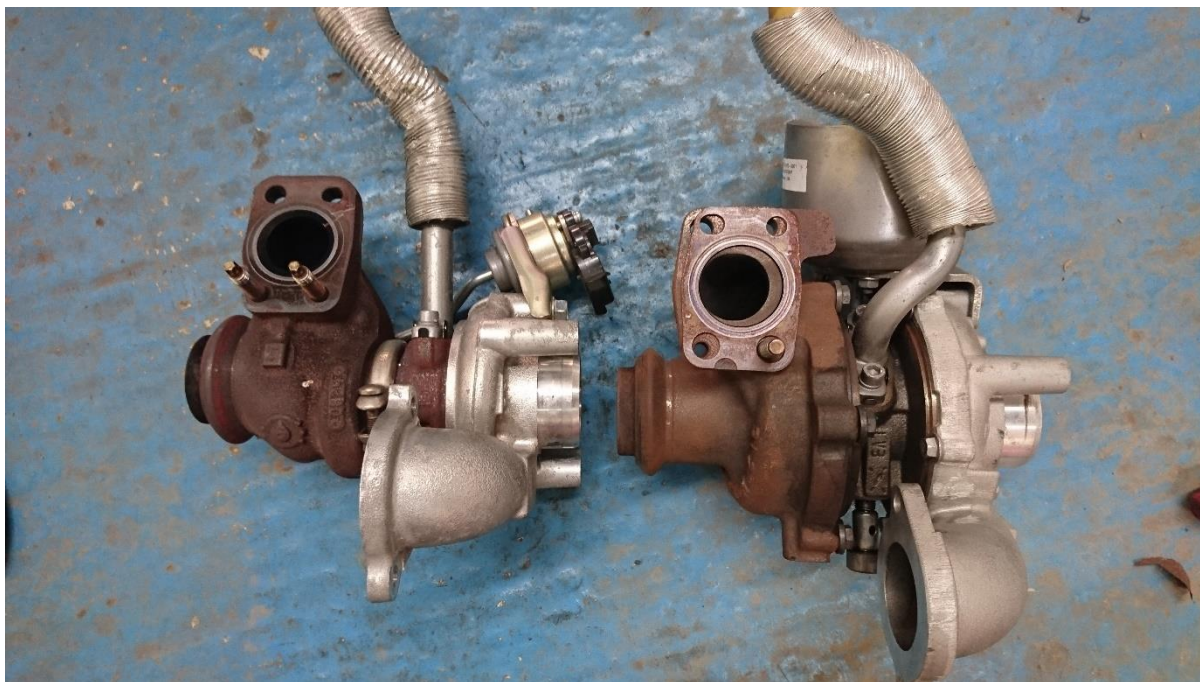
This guide is also applicable for 1.6 BlueHDI 75 and 100 models, DO NOT USE THE GTC12 turbo!

The GTD12 turbo and the DPF delete pipe is available from our webshop.

[GTD1244VZ – VNT Turbo with uprated thrust bearing](#)

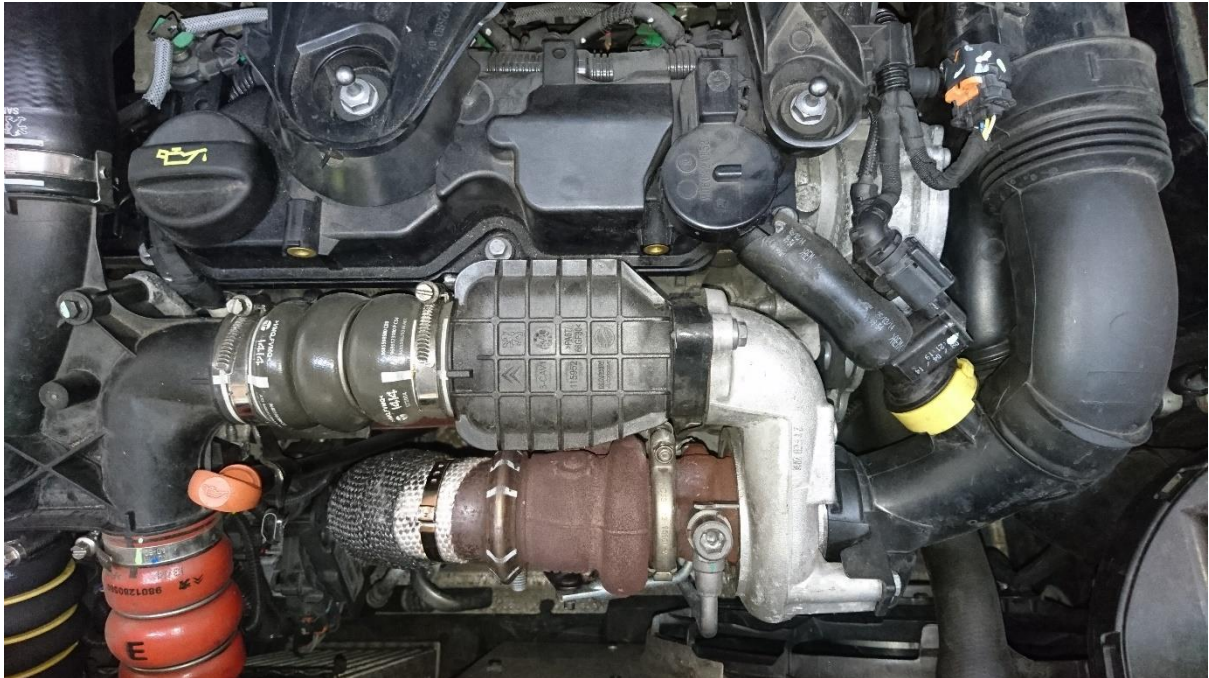
[1.6 HDI DPF delete/ Decat pipe available here \(does not fit BlueHDI\)](#)

Here's a photo showing a comparison of the two turbos, the Garrett VNT turbo (right) is clearly a lot bigger, but thanks to the VNT system it still spools very early and can give good top end figures.

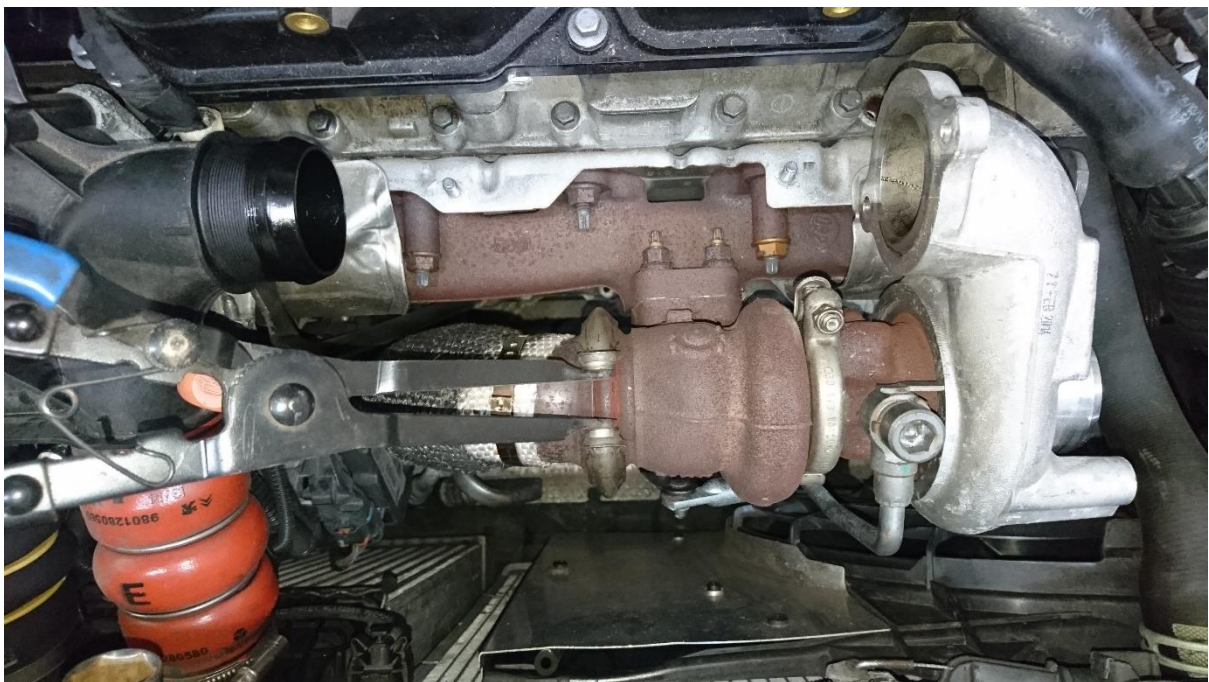


The position of the oil drain and the oil feed is the same, so it's quite an easy conversion.

The first step of the conversion is to remove the heat shields around the turbo and the DPF, you'll also need to remove the DPF and get a straight through pipe made. All the unwanted sensors in the exhaust can be written out in a remap.

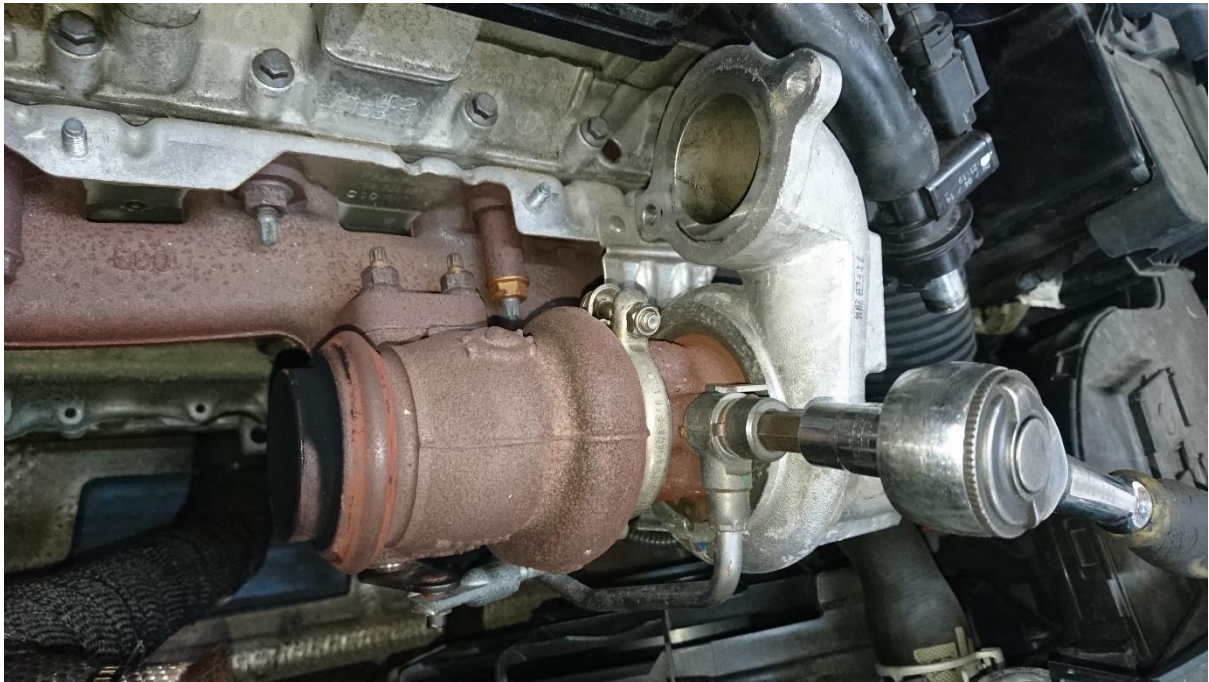


Remove the intake pipe which is held on with a 10mm bolt, and the turbo outlet to intercooler pipe which has two 10mm bolts and the jubilee clip uses a 7mm socket.



The exhaust clamp uses a 16mm nut at the bottom and then you can use a tool as shown above to remove the v band clamp.

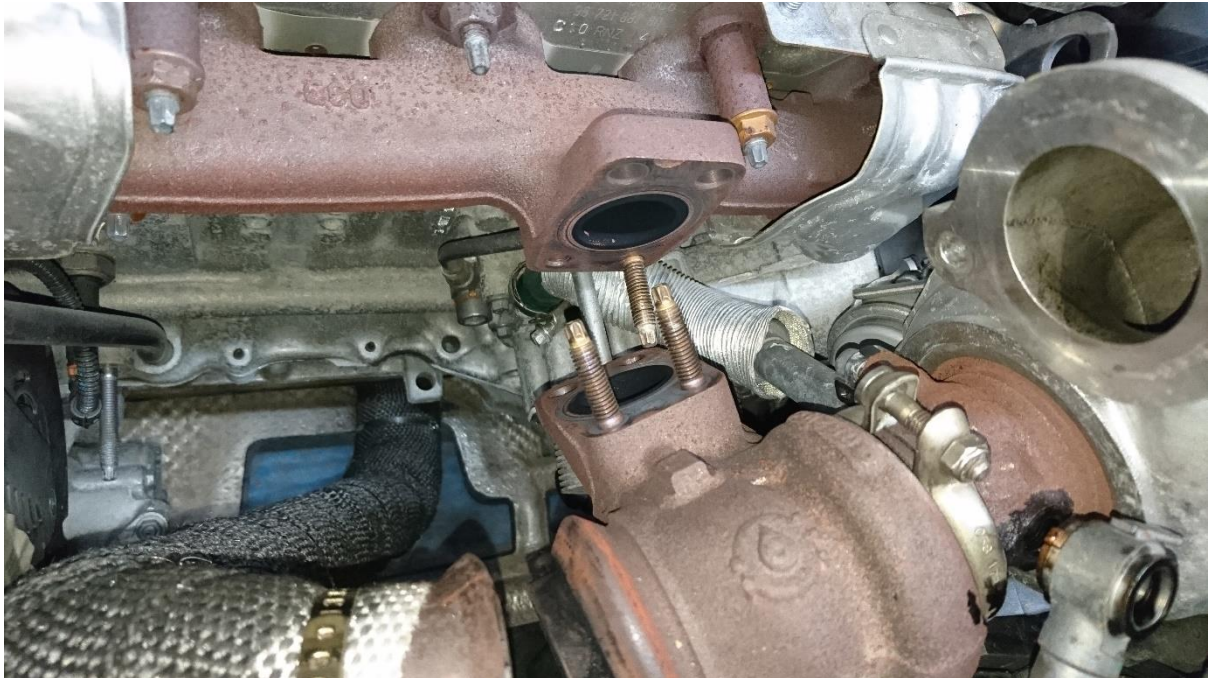
Loosen the allen head bolt which is used for the turbo oil feed.



The next step is to loosen the 4 11mm nuts holding the turbo to the manifold. If these are tight you might want to join two spanners together to get some extra leverage.



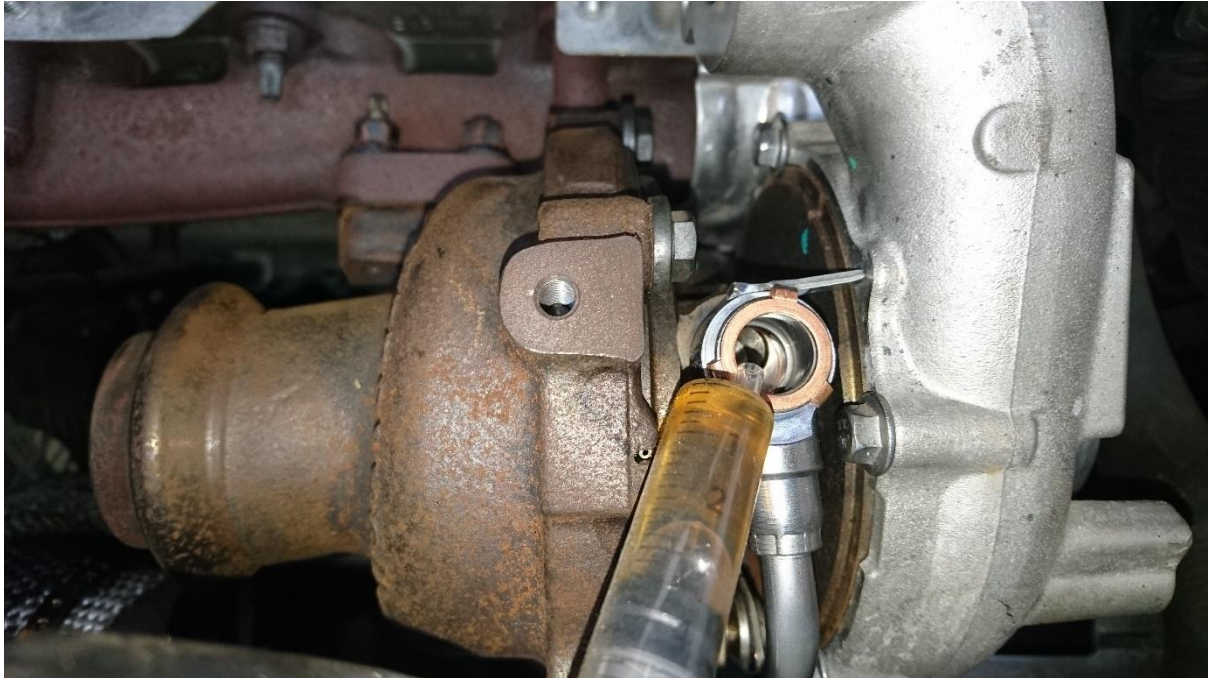
With the four nuts off you can slide the turbo outwards and then you'll be able to easily see the turbo oil drain. Loosen the 7mm nut on the jubilee clamp and then pop the hose off. The turbo will now come out.



Before you refit the turbo, you will need the correct oil pipe (part number 63846), as shown here the pipe for the GTD1244VZ is completely different. I would also recommend fitting new banjo bolts. Don't remove the strainer from the lower bolt, it's a filter and an oil restrictor, removing it will cause future problems.



Refitting the new turbo is exactly the opposite of removing the old turbo. It doesn't hurt to put some oil in the turbo so it doesn't start up dry.



TURBO POSITION SENSOR WIRING – IMPORTANT

We have found there to be a couple of different wiring settings on the original TD02 turbo, as such you will usually be required to swap pin 1 and 3 in the turbo position sensor plug. On some you may have to move all three wires.

TD02 original wiring 1:



TD02 original wiring possibility 2:



The important thing is to match the required position for the GTD12 turbo. *Usually 1 and 3 should be swapped* However, please check which pin is 5v using a multi meter.

To find 5v pin – Put one end of multi meter to battery ground terminal, the other to pin 3 and you should have your 5v. If it is not in that pin check others.

To find GND attach one terminal to the 5v pin you found and the ground to the centre pin you should see 5v across the terminals confirming you have found GND and +5v.

Correct pinout for GTD1244VZ turbo position sensor Peugeot Citroen

(If you are installing the turbo to a **Ford 1.6 TDCI**, you need to switch all three pins and end with the order: **Pin 1 – Purple/Brown, Pin 2 – Yellow, Pin 3 – Grey**)

Tip 1: if you are careful, you can remove the pin and switch them without cutting and soldering!

Tip 2: Be sure to clip in the connect HARD. Many people get a fault and it's because it isn't properly clipped in to the plug so none of the wires are connected until it is properly clicked in.

When you come to connect the plug to the turbo actuator position sensor you will find that it has been designed to prevent you from connecting it to the wrong turbo. To get the extra length on the wire you simply need to remove the 90-degree collar that is clipped on to the wire.



The intake pipe is also designed in a way that you can't accidentally fit the wrong turbo. With a hack saw or a cutting disc you just need to remove a small piece of plastic to allow the pipe to clamp down flat to the turbo inlet.



Once the new turbo is refitted it will look quite standard.

As the intake pipe is slightly too short I chose to hold both ends with jubilee clamps so that it couldn't fall off. The standard setup just clips on without and clamps.

I chose to put some heat wrap around the turbo outlet pipe so that it wouldn't absorb heat from the turbine side of the turbo. If you do this you want the shiny side facing out to reflect heat. If you wrap the turbo you want the shiny side inwards to keep heat inside.





The standard intercooler doesn't give sufficient cooling when you're running higher levels of boost. On the dyno, I found the temperatures could get as high as 100 C at the intake manifold which has a negative effect on performance. To upgrade the intercooler the first step is to remove the under tray, the wheel arch liners and the bumper. The bumper is held on by two 10mm bolts, it's best to undo the outer bolt fully, then unclip the bumper slightly. You will now have access to the second bolt. It's best to not undo this fully as it will make it easier to refit.





Once the bumper is off you can remove the front beam to give enough space to remove the stock intercooler. Here's a comparison of the stock intercooler versus the upgraded intercooler. The area is around double and it will be in a much better position behind the grill with much better air flow to keep it cool.



Use some mild steel bar to weld up a simple bracket, it's best to go on to the same brackets as the headlights.





Once you're happy the bracket is the correct size and that the bumper will fit back on you can weld it fully and paint it to prevent rust.

To join the intercooler to the inlet manifold you will need:

2 x 48<57mm 45 degree silicone bend

1 x 57<63mm 90 degree short radius silicone bend

1 x 57<63mm 90 degree long radius silicone bend

1 x 57mm 45 degree short radius silicone bend

1 x 57mm 45 degree alloy joiner 100mm leg length (wasn't long enough)

3 x 57mm alloy swaged joiners

1 x 57mm silicone join to lengthen the alloy 45 bend.



Here's how the pipe work looks from above.



Here's the final job with the intercooler and pipe work fitted.



And now the hard part begins. You're going to have some faults when you start up as the turbo position sensor uses a different calibration and that will be picked up by the ECU. You can't really use the car until the turbo has been set up properly as the ECU will not allow any boost.

The remapping is very complex to get this turbo to work nicely on this ECU. On my project car it took almost 150 different remaps with different tweaks and different experiments to get it running perfectly. The turbo spools very early (around 1750 RPM) and gives great low-down torque and lots



of high end power. The standard TD02 turbo does drive nicely in the low revs but it really runs out of puff quickly. With this turbo upgrade it makes a big difference to driveability.

Once on the dyno I found the upgraded intercooler made a big difference. Before we had to cut the test short because intake temperatures were getting past 100C before 4000 RPM. With the upgraded intercooler, they didn't pass 40C even after two consecutive runs revving the engine to around 4500 RPM. It could be the case the stock intercooler performs better when on the road as the bumper is designed to bring air flow over it, however on the dyno this is not the case.

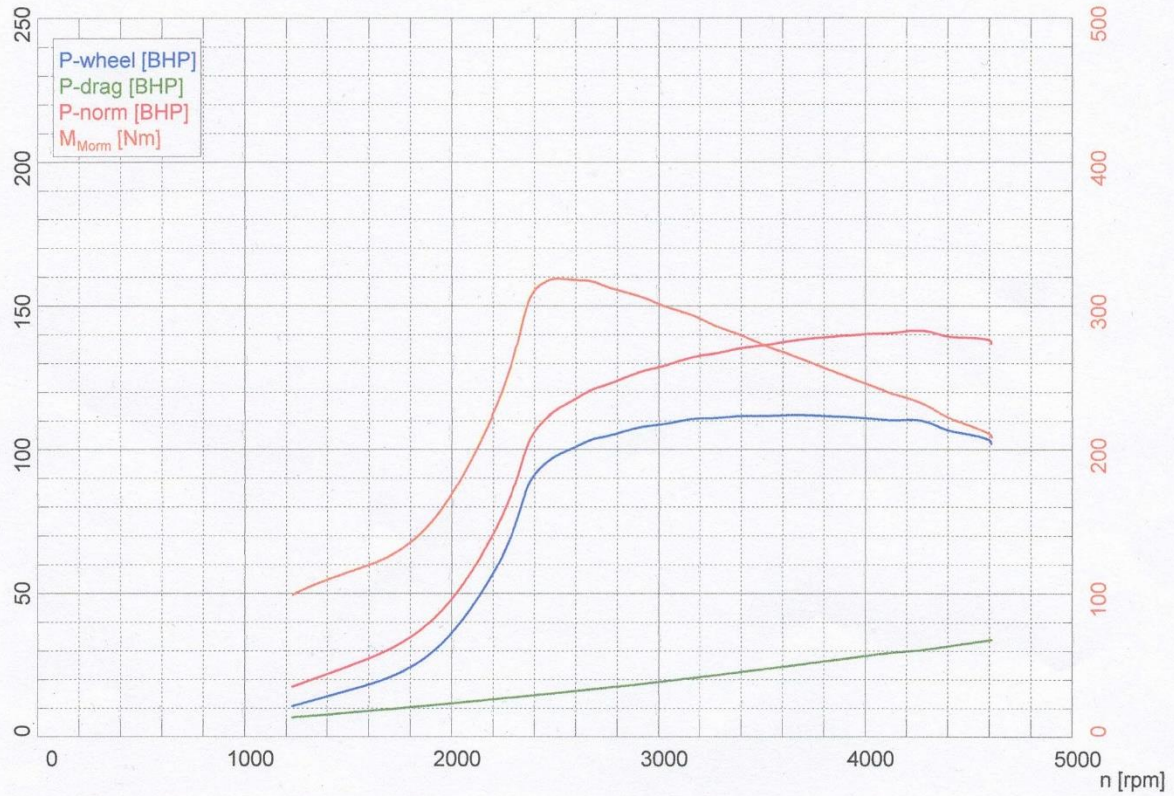
The final power figures were very good with 318Nm and 141 BHP. We've also dynoed several cars at the 150 BHP mark on different dynos with the same GTD12 turbo since this project.

Troubleshooting: If after remapping you have a permanent fault with the turbo position sensor and a constant reading of 0% or 99% on live data, then you must swap wires 1&3 in the electrical connector to the turbo position sensor.



Measurement date: 19.08.2017 (15:32)

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Power data

Corrected power ¹⁾	P_{Norm}	141.2 BHP / 103.8 kW
Engine power	P_{Eng}	140.1 BHP / 103.0 kW
Wheel power	P_{Wheel}	110.2 BHP / 81.0 kW
Drag power	P_{Drag}	29.9 BHP / 22.0 kW
Max. power at		4240 rpm / 160.5 km/h
Torque ¹⁾	M_{Mom}	318.5 Nm
Max. Torque at		2520 rpm / 95.4 km/h
Max. attained RPM		4610 rpm / 174.6 km/h

¹⁾ Correction acc. to DIN 70020
Correction factors: $Q_v = 0.00\%$

Ambient data

Ambient temperature	$T_{Ambient}$	19.7 °C
Intake air temperature	$T_{Intake\ air}$	18.8 °C
Relative humidity	H_{Air}	67.1 %
Air pressure	p_{Air}	997.8 hPa
Steam pressure	p_{Steam}	15.4 hPa
Oil temperature	T_{Oil}	19.0 °C
Fuel temperature	T_{Fuel}	--- °C