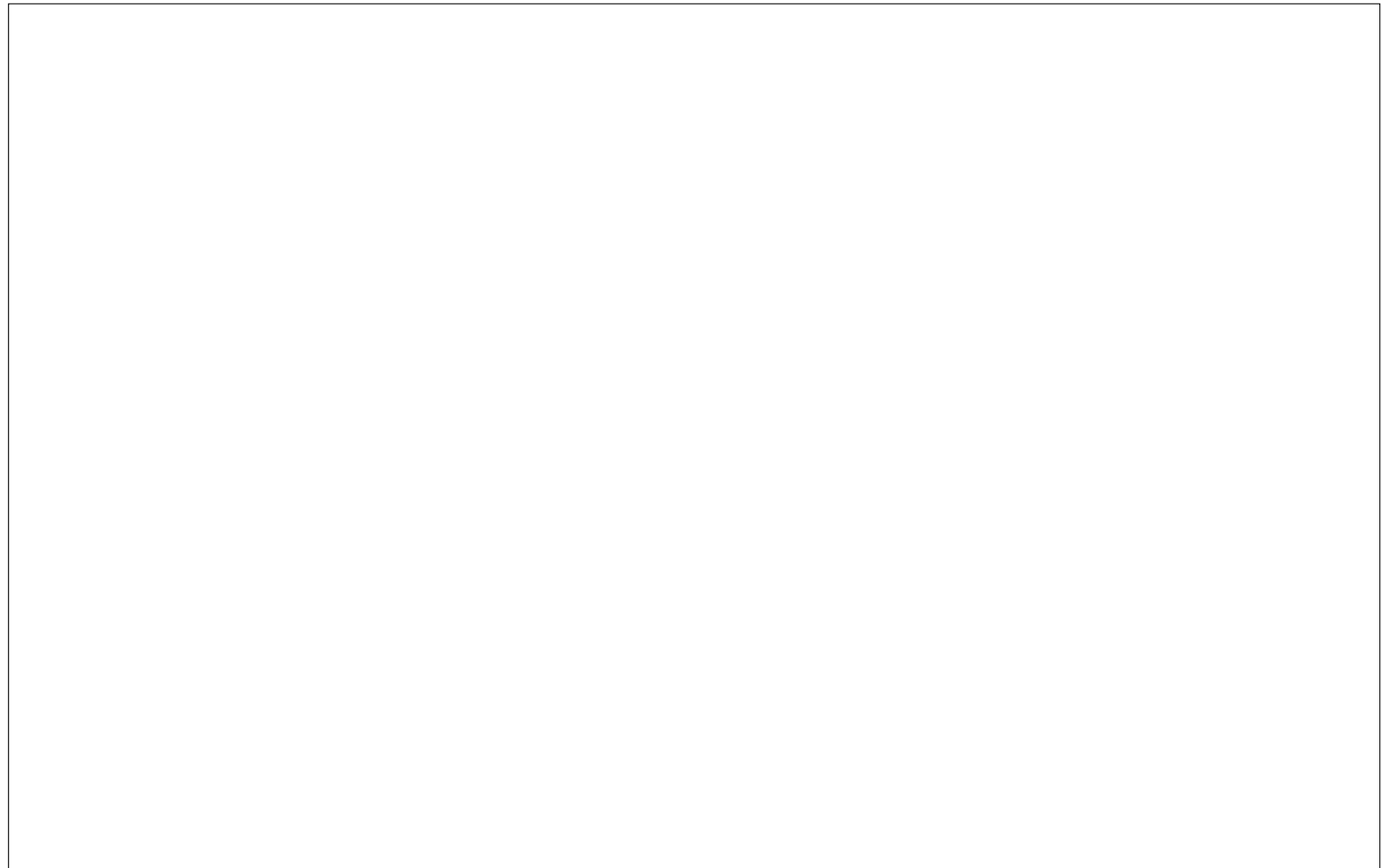




DID YOU KNOW?

You should take your time when starting up and stopping the engine: this will ensure the good lubrication of the turbo at the start and facilitate the slowing down process before it is switched off.

If you follow the maintenance guidelines for your vehicle, your turbo will last longer.



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ZOOM

FPT MAKES THE DIFFERENCE. LET'S SEE HOW.



GENUINE TURBOCHARGERS

MAXIMISE POWER
AND REDUCE CONSUMPTION

Genuine Parts
HIGH PERFORMANCE



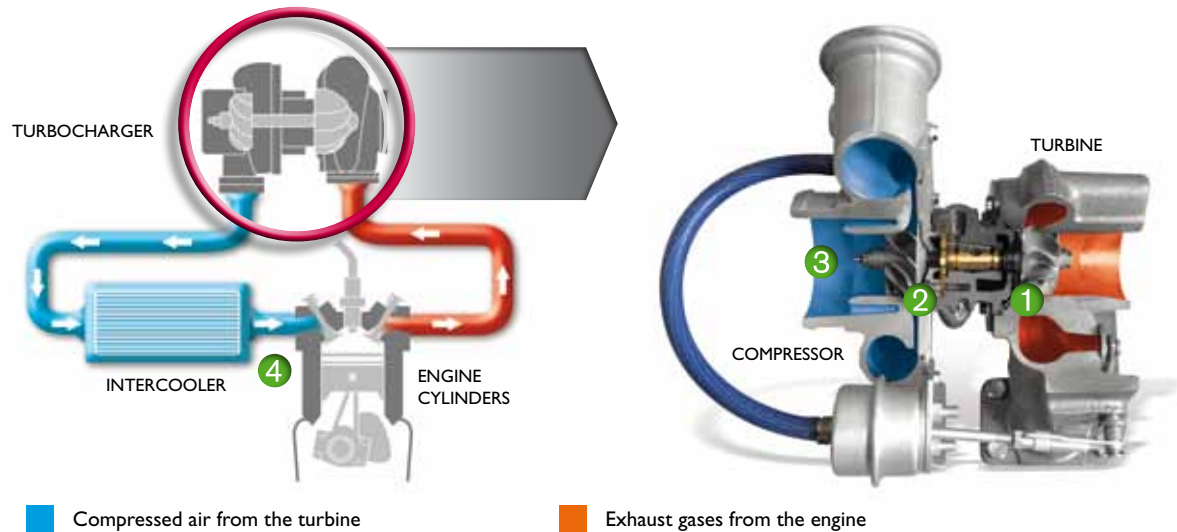


THE ROLE OF THE TURBOCHARGER.

The turbocharger is a means to increasing the power of an engine. It is located in the engine between the exhaust and the intake manifold.

Turbochargers work according to the following principle: The exhaust gases exiting the engine make a **turbine (1)** rotate. The fan in this turbine is linked by a connection shaft to a **second turbine (2)** which is designed to draw in the air. Downstream of this turbine is a **compressor (3)**, the purpose of which is to compress the air that is drawn in. The compressed air is then sent to the **engine (4)**, an action which increases the level of oxygen and the pressure inside the combustion chamber.

The more the air is compressed and the more fuel is added, the stronger the explosion and the quicker the movement of the pistons inside the cylinder, resulting in **more powerful engine performance and greater fuel efficiency.**



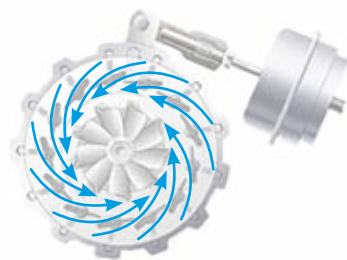
EVOLUTION: VARIABLE GEOMETRY TURBOCHARGER

The VGT regulates the flow of exhaust gases at the turbine inlet, thereby adjusting the flow rate to optimize the power of the turbine as a function of the required load.

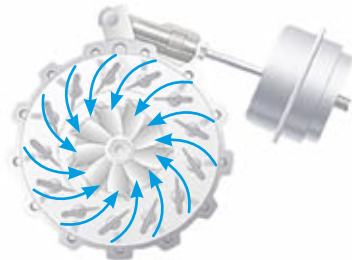
The VGT increases engine performance also at low speed.

The Variable Geometry is linked to the orientation angle of the turbine blades:

- **When engine is at low RPM**, exhaust gases have low pressure, then the VGT blades draw closer to allow pressure increase;
- **When engine is at high speed**, exhaust gases have high pressure, the VGT blades move back to decrease pressure and avoid overheating.



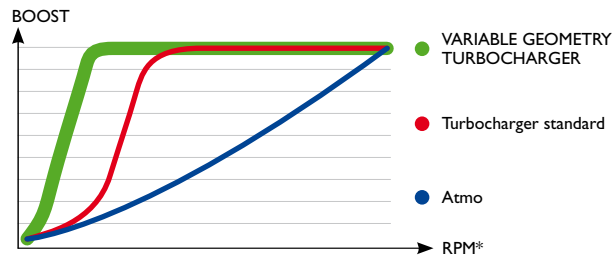
LOW ENGINE RPM*



HIGH ENGINE RPM*

* RPM = revolutions per minute

COMPARISON OF DIFFERENT TYPES OF TURBOCHARGERS



WHY CHOOSE AN FPT TURBOCHARGER?

It is essential that the turbocharger is carefully balanced and made of special high temperature resistant materials. In fact the speed of the turbine can exceed 120,000 rpm.

With the genuine product the original power of your engine is maintained.

+ PERFORMANCE

Longer life cycle thanks to FPT high specification.

+ LONGEVITY

Turbocharging optimisation is designed, analysed and developed depending on the needs of your engine.

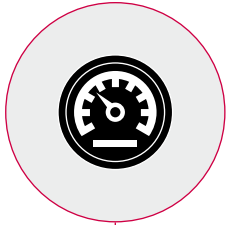
- FUEL CONSUMPTION





RECOMMENDATIONS FOR TURBOCHARGER MAINTENANCE.

The following symptoms would indicate a faulty turbocharger:



THE ENGINE DOES NOT DELIVER ENOUGH POWER



THE TURBOCHARGER MAKES NOISE



BLACK OR BLUE EXHAUST GAS



EXCESSIVE OIL ENGINE CONSUMPTION



OIL LEAK TO THE SIDE OF:
• air intake
• turbine



THE CAUSES OF THE FAILURES:

PRESENCE OF EXTERNAL PARTS CAN DAMAGE THE TURBOCHARGER.

TIP: REPLACE THE AIR FILTER AT INTERVAL RECOMMENDED BY PLAN.

IN CASE OF INSUFFICIENT LUBRICATION, THE BEARINGS MAY BE DAMAGED AND THE COMPRESSOR WHEEL BLADES COULD TOUCH THE COMPRESSOR HOUSING, RESULTING IN DEFORMED BLADES.

TIP: CHOOSE THE CORRECT OIL FILTER AS INDICATED IN THE MAINTENANCE PLAN AND THE CORRECT OIL AS RECOMMENDED!

AIR LEAKAGE BETWEEN THE TURBOCHARGER AND THE INTAKE MANIFOLD MAY REDUCE TURBO PERFORMANCE.

TIP: CHANGE THE GASKETS WHEN REPLACING THE TURBO.