

## Turbocharger Failure:

# OVERSPEEDING

BEFORE YOU FIT THE REPLACEMENT TURBOCHARGER IT IS VERY IMPORTANT TO RECITIFY THE CAUSE OF THE FAILURE, THIS IS OFTEN DUE TO A 3RD PARTY ISSUE OR FAULT WITH THE VEHICLE!

### What is turbocharger overspeed?

Overspeed is when the turbocharger is pushed beyond its designed limits, If the turbocharger is forced beyond this limit it can cause the blades to start to chip away and in some instances the wheel itself can fracture.

### How does overspeed cause the turbocharger to fail?

Each turbo is designed and manufactured to rotate at the correct speed for its application and size. Overspeeding happens when the turbo rotates at a greater speed than its operational limits. Overspeed can push the turbo beyond its safe operating parameters, causing it to fail by damaging the complete center housing and rotating assembly and in some extreme cases the complete turbo.

If the turbo continues to overspeed, it can overboost the engine, resulting in serious damage to the internal components and potentially complete engine failure.

### What causes turbocharger overspeed?

There are several common causes for overspeed, we recommend looking into associated components that affect when the turbocharger is boosting, for example an EGR valve, boost control solenoids and boost pipes. Other factors like a damaged intercooler, a detached air hose intercooler and faulty remaps could cause the turbocharger to overcompensate making it work much harder and consequently causing it to overspeed..

### What are the signs of overspeed?

When a turbocharger fails due to overspeed the damage can range from just a fractured blade to a complete and catastrophic failure, signs we are looking for are unique to this style of failure:

- ◇ **Orange peel effect** – This is created by an expansion and contraction of the wheel due to excess heat, this creates an orange peel like texture on the back-face of the compressor wheel.. The heated and expanded wheel will also start to rub and break apart.
- ◇ **Fractured Blades** – At excess speeds and load the blades on the turbo will start to flutter, under extended duration this can cause mechanical fatigue and subsequently a fracturing of the blades.
- ◇ **Destroyed wheel** – Because the wheels are spinning way beyond their designed limit this causes a fatigue failure and the wheel itself can break apart, burst and split into pieces. Depending on how bad the failure is it is even possible for the back plate and compressor cover to fracture due to the excess loading and in some cases it can propel the turbine wheel into the exhaust system.



Orange peel effect



Fractured blade



Destroyed by overspeed

Midland Turbo Fact Sheet— Provided to clarify details relating to a type of turbocharger failure, if you need further clarification and what could cause this or what you need to look into please don't hesitate to get back in touch with us!

Midland Turbo Limited, Unit 7K Blenheim Court, Blenheim Park Road, Blenheim Park, Bulwell, Nottingham, NG6 8YP —  
Telephone: 01159752458 Website: [www.midlandturbo.com](http://www.midlandturbo.com) Email: [info@midlandturbo.com](mailto:info@midlandturbo.com)



MIDLANDTURBO

Unit 7K Blenheim Court  
Blenheim Park Road  
Blenheim Park, Bulwell  
Nottingham  
NG6 8YP  
Telephone: 0115 975 2458  
Website: [www.midlandturbo.com](http://www.midlandturbo.com)  
Email: [info@midlandturbo.com](mailto:info@midlandturbo.com)

### Things to check

- Faulty boost control valve.
- Split in a boost pipe, detached air hose.
- Damaged intercooler.
- EGR valve sticking.
- Faulty remaps.
- Worn injectors.
- Engine mods 'chipping' and or 'over-fuelling.'
- Tampering with the wastegate.
- Fitting an incorrect turbocharger.
- Check sensors and ECU operating correctly.
- Restriction in the air filter system.

### Important

**A TURBOCHARGER FAILURE DUE TO OVERSPEEDING WILL NOT BE COVERED UNDER WARRANTY**

