Turbo Failure:
Oil Contamination

Foreign materials in oil, metal shavings, abrasives from inadequate filtration and dilution can score the bearings and destroy the oil film that supports the shaft. Dirty oil damages the turbocharger with heavy scoring of critical bearing surfaces.

The bearing system in 95% of turbochargers are floating bearing systems. This system differs quite substantially from conventional roller/ ball/ race bearings. The floating bearing system depends on a constant supply of clean oil between the inner face of the turbo's bearing and the rotating shaft. This film of oil is vital to prevent wear of both components. Loss off efficient lubrication between these surfaces for more than 2 seconds will cause wear on both surfaces, resulting in bearing failure.

The manufactured tolerance between the bearing and shaft is no more than 0.2mm. The 8 oil feel holes on the bearing (which supply the oil film) have a diameter of no greater than 0.7mm. It's therefore easy to see why a clean, effective oil supply is vital to avoid premature turbo failure.

Symptoms:

- *Turbo screeching or whining during operation*
- *Loss of performance*
- *Whistling turbo*
- *Excessive play in shaft*
- *Blade tips rubbing off their housings*
- *Excessive oil consumption*
- *Oil leak through the turbo*
- *Smokey exhaust*

Causes:

- *Poor oil quality.*
- *Infrequent servicing.*
- *Poor quality oil filtering*
- *Poor combustion process leading to carbonization of oil*
- *Internal engine leaks (Coolant, Fuel etc)*
- *Metal shavings in the oil from engine wear*

The most common type of contamination of oil causing bearing failure is carbonized oil. This occurs normally due to poor quality oil and incomplete combustion.

It's also possible that an internal engine leak (coolant Fuel etc) can contaminate the oil reducing its lubricating properties.

Only good quality oil, conforming to the vehicle manufacturers guidelines should be used. It can be tempting to use a higher grade oil, or even a less expensive equivalent, but in the long term it is safer to use only the OE recommended oil.

It's always worth remembering that the new turbo is only as good as the engine its being fitted to. Always make sure all oil feed pipes are clean, and free from carbon.

Never extend the service intervals of your vehicle. The turbo depends on a good quality, viscous, pressurized oil supply to the bearings to provide protection to the bearings, in order to avoid premature turbo failure.

Remember:

Your turbo may spin at up to *150,000 RPM*.

That's the equivalent of the wheel completing 4 complete revolutions every millisecond!! It requires excellent lubrication!

Insist on using only a good quality oil grade as specified by your vehicle manufacturer.
A clean oil supply is vitally important to ensuring the long life of your turbocharger