



melett

PRECISION ENGINEERED TURBOCHARGERS & PARTS

5 FOREIGN OBJECT DAMAGE

Common turbo failure modes create much discussion between our customers and technical department. To help identify common failures in warranty situations and to provide advice on how to prevent future failures occurring, we have created a series of help guides.

Turbochargers are manufactured to precision tolerances, within 4 microns, and rotate at speeds of up to 360,000rpm. If even the smallest foreign object comes into contact with the compressor or turbine wheels it can cause catastrophic failure of the turbocharger.

What is a foreign object and what causes it?

A foreign object is simply any object that enters the turbocharger through the air inlet or exhaust inlet. When a foreign object enters the turbocharger its performance will be affected very quickly.

Signs of foreign object damage:

- Noise from the turbo during operation
- Loss of performance
- Chipping of compressor or turbine blades
- Pitting around the compressor inlet
- Pitting on the compressor blades

Causes of foreign object damage:

- Small particles entering through damaged hoses
- If the air filter is damaged (or faulty), of a low quality or missing, objects will be sucked into the air intake
- Debris from a previous turbocharger failure
- Broken engine components, e.g. valves or fragments of damaged piston, injector tips
- Bolts, nuts, washers, rags or other items left in the intake pipe during servicing



Damage to inducer of turbine wheel

Preventing turbo failure caused by a foreign object:

- Make sure air hoses are clear from blockages and other loose objects
- Check that air hoses are intact and in good working condition
- Ensure the air filter is the correct one for the vehicle
- Ensure no debris or engine fragments remain from the previous turbo failure
- Using new gaskets helps to prevent the possibility of gasket break up and also ensure a perfect seal

Please note:

Never continue to operate a turbocharger with damaged blades as the rotor balance will be affected and this could impact its service life.

For further information on this or other topics, please contact Melett Technical Support. sales@melett.com