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PRECISION ENGINEERED
TURBOCHARGERS & PARTS

FOREIGN OBJECT DAMAGE

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What is foreign object damage?

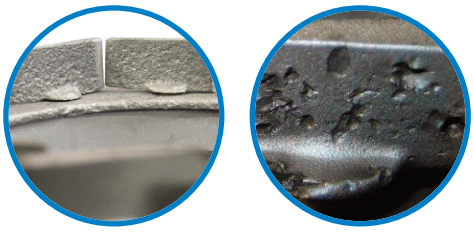
A foreign object is simply any object that enters the turbocharger through the air inlet or exhaust inlet. When a foreign object enters the turbocharger, its performance will be affected. There are various reasons for this damage, as well as signs to look out for and ways to prevent it.

Causes of foreign object damage:

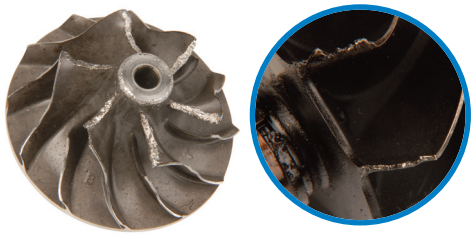
- Small particles entering through a damaged hoses connected to the turbocharger.
- Objects sucked into the air intake through damaged (or faulty), of a low quality, or missing air filter.
- Debris from a previous turbocharger failure can stay in the systems and damage the new one.
- Broken off engine components, e.g. valves, fragments of damaged pistons or injector tips.
- Objects left in the intake pipe during servicing like bolts, nuts, washers, rags or other items.
- Particles in the exhaust gases e.g. coke from poor combustion.
- Ice in low temperature conditions which can form within the intake system.

Signs of foreign object damage:

- Noise from the turbo during operation such as grinding, rattling, or high-pitched sounds.
- Loss of performance and power output from the engine.
- Visible damage to the compressor or turbine blades.
- Pitting around the compressor inlet.
- Pitting on the nozzle ring assembly vanes.



Pitting on the VNT blades



Damage to inducer of turbine wheel

Preventing turbo failure caused by foreign object damage:

- Ensure air hoses are free from blockages, regularly check them for any signs of damage, cracks, or leaks.
- Remove any loose objects or debris that may accumulate during servicing.
- Check the air hoses' integrity, ensuring they are intact and properly connected to prevent objects from entering the turbocharger
- Always use the correct air filter suitable for your specific vehicle model and regularly replace it according to the manufacturer's recommendations.
- Clean the intake and exhaust system after a turbocharger failure to eliminate any debris or fragments that could harm the new turbocharger.
- Using new gaskets helps to prevent the possibility of gasket break up and ensure a perfect seal.
- Avoid running the vehicle without the air intake connected to the turbocharger to prevent objects from getting sucked in.

TECH TIP - Never continue to operate a turbocharger with damaged blades as the rotor balance will be affected and this could impact its service life. **Always** replace or fully clean intake pipes and check for debris before fitting replacement turbo.

For further information on this or other topics, visit www.melett.com/technical or contact our team via melett_sales@wabtec.com

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