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PRECISION ENGINEERED
TURBOCHARGERS & PARTS

OVERHEATING

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What is overheating?

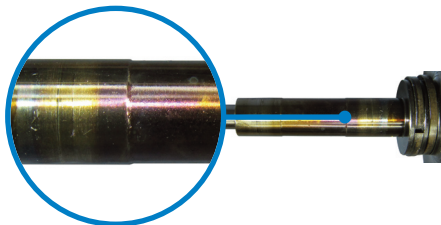
“Overheating” refers to a situation in which a system or component operates at a temperature that is higher than what is considered safe or normal, which can be caused by a variety of factors such as excessive heat generation, inadequate cooling, or both.

Causes of overheating:

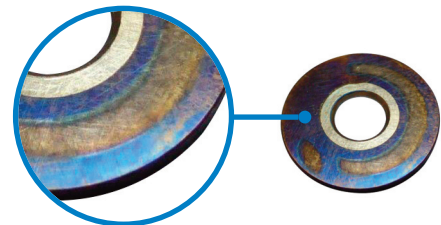
- Engine “hot shut downs” – When an engine is shut down while still hot, the high temperatures inside the engine can cause heat to build up in certain components, such as the turbocharger or exhaust system. This can cause damage to these components over time and can potentially lead to premature failure.
- DPF issues, such as regeneration, resulting in increased exhaust gas pressure and temperatures which leads to overheating of the turbine side of the turbocharger. If the DPF becomes clogged or fails to regenerate properly, the exhaust backpressure can build up, which can cause a variety of issues such as reduced engine performance, increased fuel consumption and turbocharger damage.
- Modifications of the engine performance like remapping, chipping or over-fueling.

Signs of overheating:

- Discoloration at the hot end of the turbine wheel, spreading along journal bearing area
- “Heat soak” from the turbine side of the turbocharger through to the compressor side, causing discoloration to the turbine shaft and bearing housing
- Discolouration of internal components including thrust washer and flinger; occasionally without evidence of wear
- Collapse (loss of tension) to turbine end piston ring
- Carbon build up in the oil feeds and piston ring area
- Abnormal, excess wear to turbine end piston ring and groove
- Turbine blades appearance being uniformly curved downwards
- Small sections or edges of the turbine blades being fractured/partial loss of blades



Discolouration of shaft



Discolouration of internal parts

Prevention:

- Check the DPF is in good working condition and is not clogged which can cause backpressure in the exhaust system which can negatively impact turbocharger performance.
- Ensure there are no leaks in the cooling lines
- Give the turbocharger time to cool, particularly after long journeys or harsh driving conditions



TECH TIP - Overheating can often lead to insufficient lubrication due to excessive heat at the turbine end and/or carbonisation of oil within the oil feeds.

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