



# melett

PRECISION ENGINEERED TURBOCHARGERS & PARTS

## 4 LACK OF LUBRICATION /OIL STARVATION

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 there is a lack of lubrication within the turbocharger the consequences can be severe.

- If oil levels are low, the turbocharger fails
- If the wrong grade of oil is used, the turbocharger fails
- If oil becomes contaminated, the turbocharger fails

Below we have highlighted the causes and the signs of oil starvation, to help you identify and prevent oil starvation from reoccurring when carrying out a repair. If the original cause of failure is not identified it is likely the same type of failure will occur on the remanufactured turbo. A lack of lubrication can result in catastrophic damage to the bearing systems which can occur within seconds of the turbocharger commencing operation.

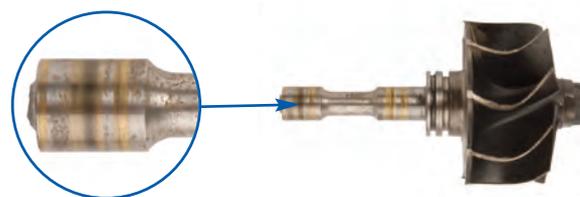
### Signs of lack of lubrication / oil starvation:

- Material transfer (caused by high temperature due to friction from bearings) to other thrust parts and the journal bearing diameter of the shaft and wheel
- Discolouration to the thrust parts and the journal bearing diameter of the shaft and wheel
- Excessive wear to the thrust pads of the thrust bearing
- Excessive wear to the journal bearings

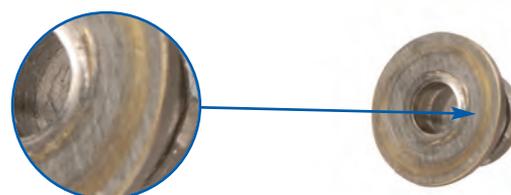
### Causes of lack of lubrication / oil starvation:

- Poor oil filter maintenance
- Insufficient oil in the sump
- Incorrect oil inlet gasket used leading to restriction in oil supply
- Build-up (coking) / carbon deposits in the oil feed pipe
- Applying silicone to the oil inlet gasket causing blockages
- Sludge or coke build up in bearing housing from hot shutdowns
- A damaged, blocked or low quality oil filter
- Failure to prime the turbo with oil before initial run

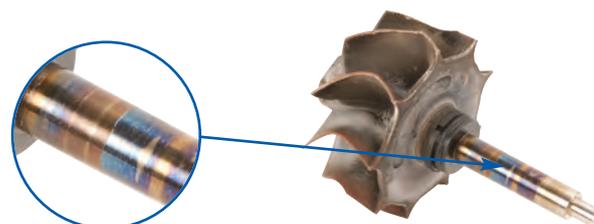
- Engine left idle for long periods, especially during cold weather
- Oil feed pipes containing bends or kinks
- Engine wear



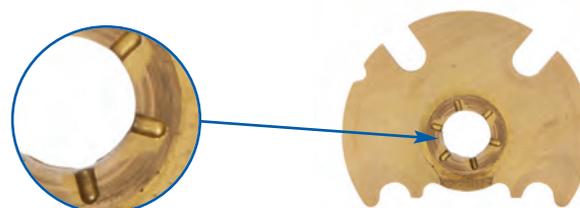
Material transfer from journal bearing



Material transfer from thrust bearing



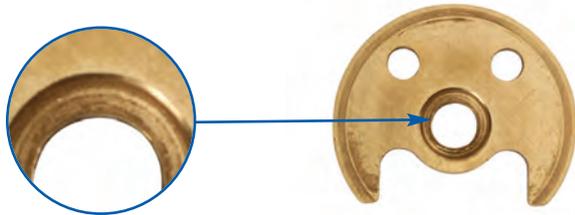
Discolouration to diameter of shaft and wheel



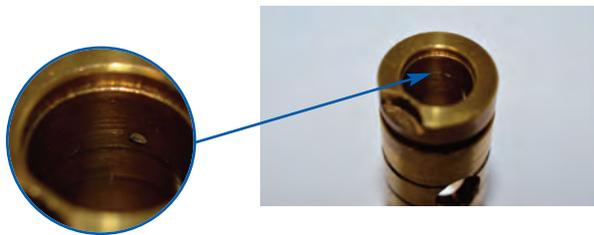
Excessive wear to thrust bearing

*Continued over*

## 4 LACK OF LUBRICATION/OIL STARVATION



Excessive wear to thrust bearing



Excessive wear to journal bearing

### Preventing turbo failure caused by lack of lubrication / oil starvation

- Oil supply to the turbo is critical, always check oil pressures are correct
- Always remember to prime the replacement turbocharger with oil before fitting.
- Avoid using silicone on oil gaskets as they can easily become detached and block oil passages
- Clean or replace oil inlet pipes to remove carbon deposits or sludge that could restrict oil flow to the bearing systems
- Use fresh oil and new oil filters (which have been recommended by the engine manufacturer) when fitting a replacement turbocharger

For further information on this or other topics, please contact Melett Technical Support. [sales@melett.com](mailto:sales@melett.com)