**COMMON TURBO FAILURES**

To help identify failures in warranty situations and to provide advice on how to prevent future failures occurring, the below information highlights the most common turbo failure modes. Visit the Melett TurboHub for further information, or alternatively contact Melett Technical Support, [sales@melett.com](mailto:sales@melett.com)

### OIL CONTAMINATION

**What causes oil contamination?**
- If the oil filter is blocked/damaged or a poor quality oil filter is used
- Excess moisture can lead to premature oil degradation
- High carbon build up in the engine can quickly contaminate new oil
- Alternatively, if oil levels are too low or if the wrong grade of oil is used, the turbocharger can prematurely fail.

**Turbo failure prevention:**
- Using new oil and filters helps to reduce the risk
- Replacement oil must be the correct grade for the engine
- Replacing or cleaning the oil inlet pipes and in-line micro filters

**Signs of oil contamination:**
- Scoring to the journal bearing diameter of the shaft
- Scoring to thrust parts
- Scoring to journal bearings

### OVERSPEEDING

**What causes overspeeding?**
- Engine modifications including ‘chipping’ or ‘over-fuelling’
- Inconsistent flow of air into the turbo - this can be caused by a tear in the air hose or it becoming completely detached, or by restrictions in the air intake filter or pipe work
- The wastegate or VNT mechanism has been set incorrectly
- Worn injectors
- Installing an incorrect turbo

**Signs of overspeeding:**
- Complete component failure
- Material transfer from journal bearing
- Orange peel effect to compressor wheel
- Discolouration to the journal bearing diameter of the shaft

### OIL STARVATION

**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
- A damaged, blocked or low quality oil filter

**Turbo failure prevention:**
- Turbo oil supply is critical, always check oil pressures are correct
- 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

**Signs of oil starvation:**
- Excessive wear to thrust bearing

### FOREIGN OBJECT DAMAGE

**Signs of foreign object damage:**
- Chipping of compressor or turbine blades
- Pitting around the compressor inlet
- Debris from a previous turbocharger failure
- Broken engine components e.g valves or injector tips

**What causes foreign object damage?**
- 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
- No debris or engine fragments remain from the previous turbo failure
- Ensure new gaskets help to prevent the possibility of gasket break up and also ensure a perfect seal
- Make sure air hoses are clear from blockages or loose objects

**Turbo failure prevention:**
- Ensure air and oil drain systems are clear from blockages or restrictions
- Check the exhaust system to make sure there are no leaks present
- Ensure DPF and Catalytic converter are free of blockages

**Signs of foreign object damage:**
- Damage to inducer of compressor or turbine wheel
- Blue smoke from exhaust
- Blue smoke from the exhaust
- Black smoke from the exhaust
- Oil residue in compressor/turbine housings
- Discolouration to the journal bearing diameter of the shaft

### OIL LEAKS

**Causes of oil leaks into the compressor and turbine ends:**
- Repeated hot engine shutdowns leading to carbon deposits (coke) in the centre housing
- Physical damage to the turbo’s rotating parts and excessive bearing clearance
- Fitting the incorrect turbocharger
- Restrictions in the oil return pipe

**Turbo failure prevention:**
- Ensure air and oil drain systems are clear from blockages or restrictions
- Ensure oil return pipe and evidence of an oil leak to the compressor end

**Causes of oil leaks at the compressor end:**
- Blockages or restrictions to the air intake pipe, hose or air intake filter can create a vacuum, causing oil to leak into the compressor housing
- Air leaks in the intake hoses or at the intercooler

**Causes of oil leaks at the turbine end:**
- Leaks within the exhaust system
- A clogged bearing housing
- Leaks in the EGR (exhaust gas recirculation) system

**Signs of oil leaks:**
- Compressor wheel rub
- Orange peel effect to compressor wheel
- Excessive wear to thrust bearing
- Discolouration to the journal bearing diameter of the shaft

Using precision engineered turbocharger parts, such as Melett, which are manufactured to OE specifications, will significantly reduce warranty situations.