



## Removing Contamination from Engines and Lubrication Systems

It is critical to remove all sources of contamination before assembling or reassembling any engine. It has been found that the number one source of premature engine wear or failure is contamination.

Zipper's has and continues to collaborate with our customers to determine the root cause of engine failures. The re-occurring fundamental problem is in not identifying and removing all contaminants prior to installing new parts. There are hidden places inside the engine and oiling system that collect contamination, and need to be addressed. The following document details the places to look for contamination, and the parts that need to be replaced.

**If the engine is not completely cleaned, after the engine is rebuilt and running, the vibrations will shake loose any contaminants. The hot oil will carry these contaminants throughout the engine, resulting in a premature wear or failure.**

### Common Sources of Contamination

- Shedding casting slag from OE parts
- Excessive crankcase sealer shedding from inside the engine cases
- Oil Lines and passages - Hand Clean w brushes or Replace
- Oil Coolers – **Must be replaced after a failure or excessive miles**
- Oil Cooler thermostats or adapter assemblies - **Must be carefully checked, cleaned, or replaced**
- Lifters – Must be disassembled to be thoroughly cleaned or **replaced**
- Piston Cooling Jets – **Must be replaced**
- Pushrod feed holes – Always flush and clean
- Rocker arm feed holes - Always flush and clean
- Pressure Relief Valve inside the Cam Support Plate (TC) or in the oil pump (M8)
- Cam Plates Ports & Galleys
- Oil Pump
- Lifter bores & Oil feed ports
- Contaminated Oil Pans- The baffle must be removed to clean debris hidden between the oil pan and baffle. Replacing the oil pan oil is recommended





## Additional Sources of Contamination

Special paints and or powder coated parts are notorious for contamination including:

- Media from the preparation prior to new paint or powder
- Painted, plated or powder coated oil tanks
- Custom painted fuel tanks
- Custom powder coated engine parts
- Exhaust Header Pipe Coatings – Always inspect the inside of a new pipe prior to installation!

**For more information on oil cooler contamination**

**See what Jagg says about contaminated oil coolers**

<https://www.youtube.com/watch?v=qo5TOSkoy8Q>

The risk of not thoroughly cleaning all engine components to remove all contaminants, especially from engines that have suffered from parts failures, cannot be over emphasized.

Failure to remove all contamination, including contamination harbored inside the engine and failure to replace parts that cannot be cleaned and harbor contamination before re-assembling any engine is considered improper installation.

