

Service Engineering Bulletin



Absolute Excellence



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Avoiding Foreign Particle Contamination

Dirt or foreign abrasive matter cause more premature engine failures than any other single cause.

Abrasive dirt can damage piston rings, pistons, cylinder bores, crankshafts, bearings, valves, oil seals, the oil pump, the camshaft, in fact dirt can damage any component against which movement takes place. Most engines work in a dirty environment: the vehicle wheels throw up dust and grit, air must be filtered before being drawn into an engine. With a little care and attention it is possible to guard against one source of trouble.

There are four major sources of abrasive dirt:-

1. Debris caused by general normal wear and tear. The volume is small and is created over a lengthy period. The debris can be trapped by the oil filter and removed during oil changes. This type of debris seldom causes problems in a well maintained engine.
2. Debris which gains access during engine service life. This can cause damage but the cause can be avoided by reasonable care and normal engine servicing. Regular replacement of all air and lubricating oil filters is essential. Check all connections between filters and engine particularly any trunking between the air filter and engine intake, if this is damaged, air and dirt will be drawn into the engine through the damaged area and the filter will be bypassed. Filters in the fuel breathing or vacuum systems must also be checked as recommended by the manufacturer.
3. Built in dirt should never be included by a good engine builder but we are all human and capable of mistakes. Dirt lodged in oil galleries in the engine block or crankshaft is a common source. Failure to remove all reborring or crankshaft grinding debris will cause problems. Most engine parts are lubricated during assembly. If the assembly bench is not clean, there is a possibility that dirt from the bench will adhere to the lubricated parts and be assembled into the engine with possible disastrous results.
4. A clean engine can be contaminated by dirty oil, particularly where lubricating oil is held in bulk store. The oil has to be carried from the bulk store to the engine, if the container used is not perfectly clean, any foreign material will enter the engine with the now contaminated oil.

If we could avoid dirt contamination of the engine, we would make a major contribution to the prevention of premature engine failure.