

## SB009

### Running-in Reconditioned Diesel Engines

The most critical period during any engine's life is its initial stages of operation. Running-in usually takes place in two parts, namely the removal of new bearing and machined surface roughness, followed by the bedding of such surfaces by increasing contact area and thus minimising parasitic power losses.

The practice of allowing an engine to idle or 'run-in' gently during the initial stages following a major overhaul has been found to be harmful and creates conditions likely to promote cylinder bore glazing. Such a condition occurs due to the accumulation of combustion by-products such as iron oxides, graphite and other chemicals on critical bearing surfaces, which form a hard surface coating or skin. The process usually occurs before the piston rings can generate a load carrying surface or optimum oil control capability and is actually accelerated by light load conditions.

As diesel engine manufacturers have become more familiar with the reasons for this phenomena, running-in schedules have been revised and it is now generally recommended that after the initial start-up, a maximum of only five minutes be allowed to check for oil/water leaks and oil pressure etc. Under no circumstances should a newly reconditioned engine be allowed to idle for longer than this period. The load should then be progressively increased up to 60% of maximum power for a period of sixty minutes. One major engine manufacturer recommends up to 80% of maximum power for the first 500 miles. However, where manufacturers' running-in schedules are available they should be strictly adhered to.

Even though modern diesel engine lubricants contain significant quantities of anti-wear additives, dispersants and detergents, tests have shown that ring 'bed-in' and sealing is more dependent on combustion gas pressures than ring tension or oil selection. The use of these high grade oils would normally be recommended for running-in. It is usually advisable to run an engine in on the same oil it will normally run. Change of oil brand in 'mid-life' is not recommended. In the most part, special 'running-in oils' and monograde oils are not necessary for running-in a diesel engine, unless specified by the manufacturer.