

Operation with unleaded fuel without "hardened" valve seats

M10, M20, M30, S14 , M88 without catalyst, up to production 08/1984

Situation:

As a result of a greater environmental awareness around the globe, more and more oil companies are no longer adding lead or lead tetraethyl to their fuels. These additives are used to reduce the knock properties of the fuel, especially in premium grade petrol.

In some European countries, leaded fuel has not been available at all since mid-1997.

"Non-catalyst" BMW spark ignition engines manufactured prior to the general introduction of "hardened" valve seat material (since 09/1984) require such lead additives. This will ensure that the valve seat rings are properly sealed and are stable.

Effect:

In order to meet these new market conditions, the actions detailed below under "Procedure" should be applied to affected engines.

Affected vehicles:

All vehicles with M10, M20, M30, M88 and S14 engines without catalytic converter or basic catalytic converter fittings.

Manufacturing period: start of series up to and including August 1984

Procedure:

1. The engines listed above can be run on unleaded fuel without problems occurring, provided that they have covered a distance of at least 60,000 km (approx. 40,000 miles).

In such cases, so much lead and lead tetraethyl is diffused into the material of the valve seat rings through the past frequent refuelling with leaded fuel that the required protective effect will be present for the remaining service life (memory effect).

2. If the service life is less than 60,000 km (approx. 40,000 miles) and the driving style is sporty (high engine speeds, etc.), it is advisable to add an appropriate "valve protection additive" to the fuel when refuelling with unleaded fuel.

These additives are available from most filling stations or from renowned additive manufacturers. The additive manufacturer's directions and notes on possible risks should be carefully observed.

3. If a new cylinder head was fitted to an engine of a type listed above within the scope of a repair, and this cylinder head had been sourced from the BMW part sales department after September 1984, unleaded fuel can then be used without restriction.

This is because "hardened" valve seat rings have been installed on all BMW engines since this date. The same applies to original BMW reconditioned components.

4. If the valve seat rings in the cylinder head of vehicles from the affected manufacturing period are or were merely ground using abrasive valve paste, the lead oxide coating deposited by the "memory effect" will provide the necessary protection.

If the valve seat is reworked by milling or lathing, leading to a greater degree of material loss on the surface of the valve seat, proceed as described in point 1 or 2 above, depending on the mileage covered.

5. BMW does not recommend exchanging only the valve seat rings on engines from the affected manufacturing period for the "hardened" version, as the required assembly tools are in the main not available and because there is no real cost saving compared to fitting an original BMW cylinder head.

6. Regardless of the use of fuel additives - whether with or without lead - the octane number specified by BMW for the engine in question must still be observed.

Otherwise, interference can occur due to insufficient pre-ignition knock resistance, which can in turn cause varying degrees of engine damage.

Important:

BMW will not accept any liability for complaints concerning damaged engine valves or valve seat rings, and arising in conjunction with the situation described above.