



FAILURE INFORMATION

MELTING ON THE PISTON RING LANDS AND THE PISTON CROWN FOR GASOLINE ENGINES

Description of the Failure

Melting and pitting is observed at the piston crown. (Figure 1)

The piston crown is melted and pitted to the inner core of the piston. (Figure 1)

The piston crown melts towards the pin bore. (Figure 2)



Figure 1



Figure 2

Causes of the Failure

In gasoline engines, hot points and surfaces occur due to advanced ignition, which is caused by any source of ignition before the spark plug and which results in a huge loss of efficiency. The causes of this are;

- The spark plug causes the carbon fuel accumulating on the piston crown and the engine cylinder head to burn itself.
- The cause is the inaccurate air and fuel mixture in carburetor engines.
- Due to inaccurate adjustment of the engine valves, some valves remain hot due to hot gases they continuously leak. And these hot valves cause advanced ignition of the air and fuel mixture inside the engine.
- Utilization of a fuel with an octane number different than the required one causes the failure.
- Entrance of the lubricating oil into the

combustion chamber due to worn rings and valve guides causes the failure.

- Presence of diesel fuel in the petrol used for the vehicle causes the failure.
- Excessive heat inside the engine, in general, causes the failure. The cooling system and the ignition system causing the engine to operate at high temperatures can cause the failure.
- Low temperature of the spark plug causes ignition inside the engine out of the ignition timing for the engine.



Recommendations

- The injection system, the carburetor and the ignition should be adjusted properly.
- A fuel with the octane number specified by the engine's manufacturer should be chosen.
- Piston ring compressor must be used during the engine overhauling operation.

- The spark plugs recommended by the engine's manufacturer should be used.
- Defective valves should be replaced. Especially the exhaust valves should be checked.
- The cooling system and the ignition system should be checked.



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