



# FAILURE INFORMATION

## PISTON RING FRACTURE FAILURE

### Description of the Failure

There is melting at the piston top ring area. (Figure 1). The material in this area melts and flows over.

There are marks of pieces on the piston crown, as seen in Figure 2, and these are the marks of the broken ring. The pieces of the broken ring stick into and remain in the piston crown material.



Figure 1



Figure 2

### Causes of the Failure

The failure occurs due to one of the piston rings breaking inside the engine. The causes of broken piston rings are;

#### 1 - Knocking Combustion

The piston rings that cannot bear the excessive compression pressure caused by knocking operation of the engine are broken.

#### 2 - Defective Piston and Piston Ring Assembly

The equipment used during assembly of the rings is not tightened properly and the piston ring is damaged while pushing the piston ring into the cylinder.

#### 3 - Excessive Radial Wearing

Abrasive parts and dirt getting into the engine cause the piston ring groove and the piston ring to wear away. Due to the excessive space between the piston ring groove and the piston ring, the piston ring is broken under overload. The oil consumption inside the engine increases before the failure occurs.

### Recommendations

- The air filter should be checked and replaced.
- Piston ring compressor must be used during the engine overhauling operation.
- If the space between the piston ring and the piston groove during overhauling exceeds 0.10 mm in gasoline vehicles and 0.12 mm in diesel vehicles, the pistons must be replaced.

