FAILURE INFORMATION

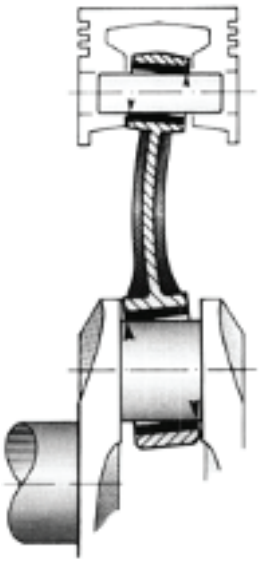
ASYMMETRICAL WEAR PATTERN ON THE PISTON SKIRT

Description of the Failure

- There are marks of asymmetrical operation at the contact surface of the piston skirt. (Figure 1)

- There are accumulations of soot on the piston crown and in the piston ring grooves.

Figure 1



Causes of the Failure

The cause of the failure is that the piston is in inclined position inside the cylinder. Whereas one side of the piston operates facing the liner, the other side operates without facing it. The pressure, which occurs as a result of ignition, leaks from the area, which does not contact the cylinder surface, towards the crankcase. The piston rings cannot hold this pressure as the pistons are inclined, and they cause pumping of oil into the combustion chamber. The causes of the pistons operating in inclined position inside the cylinder are;

- The piston rod is bended or buckled.

- Bushing groove of the piston rod is turned on an inclined axis.

- Inaccurate assembly order and inaccurate tightening values are applied.

- Space of the rod groove in the piston rod is more than necessary.

- There is dirt on the air-cooled cylinder base. Therefore, the cylinder is inclined on the engine block. Therefore, the pistons operate in inclined position inside the cylinder.

Recommendations

1. The crankshaft and the connecting rod should be machined coaxially during overhauling of the engine and the assembly should be made coaxially.

2. Cylinder head studs should be tightened at the value and in the sequence recommended by the manufacturer.

3. Rod bearing spaces should be checked. Bearings with inaccurate space measurements should not be used.

4. A special importance should be placed on cleaning during assembly of the engine and the seal remainders should be carefully cleaned.

5. Inclination of the connecting rod should be checked during engine overhauling and the inclined connecting rod should be replaced with a new one.