Installation errors: misalignment of valve spring

Situation:

In engines without a lower spring seat to support the valve spring when located in the cylinder head, valve stem damages may occur after a short mileage.

Damage description:

In fig.1 / spot 1, eccentric wear as well as material breakage at the valve guide end are clearly visible.

The supporting area for the valve spring at the cylinder head shows impressions of irregular depth. The valve spring is supported on one side of the higher cast edge. (See fig. 1 / spot 2 and fig. 2)

Cause:

The transversal breakage of the valve in the groove area and the damage of valve guide are caused by misalignment of the valve spring.

Due to the installation position (see fig. 2), the valve spring generates a torque on the valve stem via the upper spring seat. The torque exerts a lateral force onto the end of the valve stem, thus causing a bending stress which leads to a valve stem rupture in the groove area of the valve.

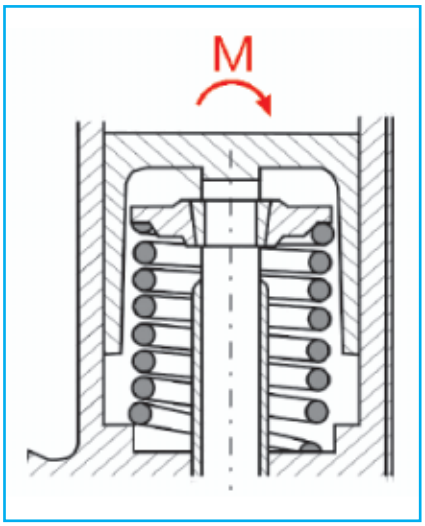

Fig.2: Valve spring tilted at the higher cast edge

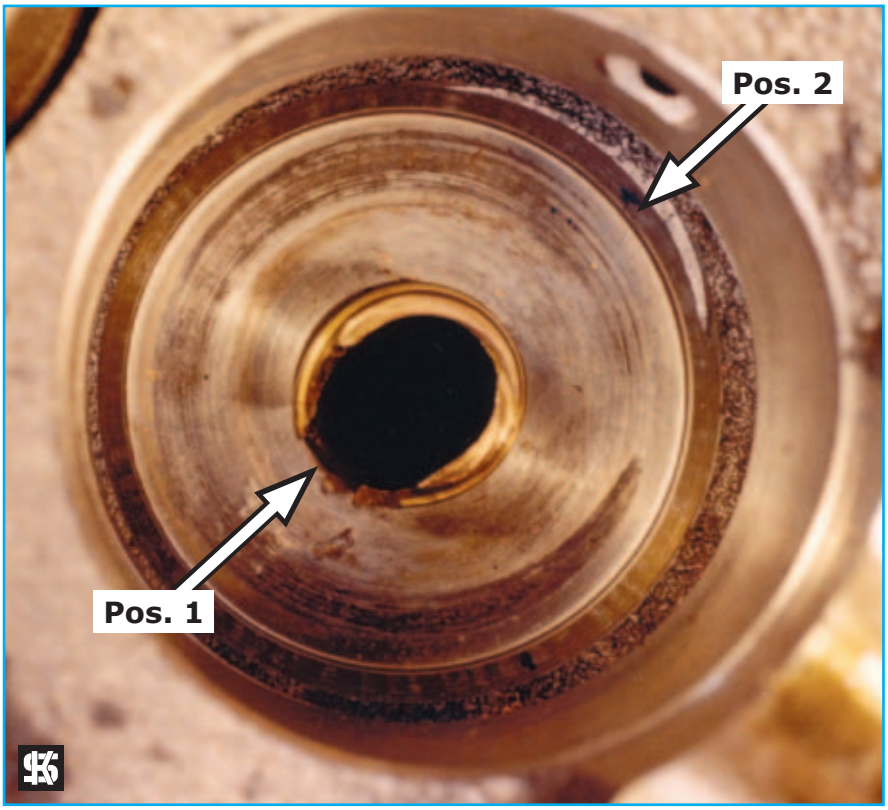

Fig.1: Valve guide damage, Eccentric wear on the valve guide caused by bending stress of the valve stem.

Important note:

When the valve spring is installed, it must sit flat on the bearing surface in the cylinder head. A tilted installation of the valve spring leads to a breakage at the valve stem end and strong wear on the valve guide, resulting in costly engine damage.

Notes:

By this installation error, independent rotation of the valve is prevented due to the elevated friction between the grooves and the valve collets.

MOTOR SERVICE INTERNATIONAL
KOLBENSCHMIDT PIERBURG

MSI Motor Service International GmbH
Untere Neckarstraße
D-74172 Neckarsulm

Phone +49-71 32-33-33 33
Fax +49-71 32-33-28 64
info@msi-motor-service.com
www.msi-motor-service.com