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How important is a correct tensioner installation January 2015



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The VW Golf range (1997-2006) features a variety of engines with different drive system layouts, but one of the most intriguing is associated with 1.4L 16V engines. Some of these twin cam engines feature two separate drive belts in two different sizes. One main camshaft belt provides the timing. A smaller cam belt drives the second cam.

Whenever a camshaft stops turning and the Synchronous Belt Drive System (SBDS) fails prematurely, the timing belt is the usual suspect. Correct diagnosis begins with an examination of the belts.

Evidence

In a recent case, an inspection showed no obvious problem with the main drive. The smaller secondary belt had failed. Careful examination showed that the belt had been significantly reduced in width.

It had been 'worn away' on the edge closest to the engine block, with the result that the narrower belt had been unable to sustain the load. The belt had snapped, allowing the piston to valve contact and as a result, the engine was destroyed. Debris from the smaller belt had found its way onto the rest of the drive system.

The likely cause of reduced width to a belt is regular contact with the engine block. This would be clear from a scoured or polished surface on either the drive system cover or the engine block. In this case, no such evidence was found. However, there was such on the back plate on the automatic tensioner, which would not normally be within the operating plane of the belt.



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Reduction in width had been caused by contact with the belt tensioner, rather than the engine block. Failure was a symptom of a very different problem.

Cause and effect

With the automatic tensioner in the correct position, contact with the small secondary belt is impossible.

However, it is possible to install this automatic tensioner upside down and in such circumstances, contact with the belt is inevitable. The evidence supported the view that this automatic tensioner had been fitted incorrectly.

Best engineering practice

Independent technical information sources are often very specific about the way the belt must be installed. Information about the installation of tensioners is often limited.

Regardless of the number of times the procedure may have been carried out on a particular model, installing a tensioner upside down is a basic error that any installer can make.

For those drives where installation of the belt drive may be more complex, Gates belt kits include all the information necessary to install belts and tensioners correctly.

Replacing the automatic tensioner, triggered the following sequence of events:

- Small drive belt made contact with the back plate of the tensioner
- The edge of the belt was pared away
- Stress increased until the belt snapped
- Piston to valve contact
- Destruction of the engine



Automatic tensioner

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Gates belt kits

Gates runs informal Technical Workshops for mechanics. These deal with specific issues on SBDS and Auxiliary Belt Drive Systems (ABDS) as well as typical installation problems. If you would like to be involved, contact your local motor factor.

Further support

To avoid similar problem, you can download the Technical Bulletin (TB035) at http://www.gatestechzone.com which deals comprehensively with this issue.

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