THE DATA

The difference between an installation that is correct and an installation that is potentially damaging can be miniscule. Where an automatic tensioner is involved, any error in the set-up may compromise the ability of the tensioner to do its job. If the tension of the belt is incorrect in any way, problems may arise. For example, misalignment of the belt may cause tracking within the drive system. This will eventually lead to premature belt failure and the potential for serious engine damage if it remains undetected.

Procedure and protocol

Upgraded tensioners are identified by a 'cross-hatched' timing belt wear indicator. They also have a shorter spacer, although the distance between the pulley and the engine block remains the same.

As always, the technical team noted that there is a clear start position (in this case Top Dead Centre), while the engine must be at room temperature. Timing marks and pointer settings (between A and B) must be observed. Pins and locking tools must be used to secure the injection pump and camshaft respectively. A torque wrench should be used to tighten the bolt on the replacement tensioner and adjustments in engine position are required. The team noted that throughout the procedure, whenever the engine is turned it must be in a clockwise direction only.

Potential four errors

With the tension of the belt set, it is possible to get the pointer into the right position, while the index tab is in the wrong position. This occurs if the engine has been turned anti-clockwise at the tension setting stage (Fig 1).

Sometimes, the pointer fails to pass point A (Fig 2). This means that the tension has been set too low. If the pointer has moved beyond point B (Fig 3), the tension is too high.

It is also possible to position the pointers perfectly between A and B, while the index tab is not 'locked' in its slot (Fig 4). If this happens, the belt will lose tension once the engine is started.

Summary

Two engines on two separate VW models had similar drive system layouts and seemed to experience premature timing belt failure. Under lab conditions, the Gates technical team confirmed that by using the correct tools and equipment, and by following the correct protocols, the replacement of the timing belt and tensioner with the appropriate belt kit can be completed relatively easily in each case.

Conclusion

With any scheduled drive system replacement, the objective must be to identify wear and to replace the belt and tensioners using the appropriate belt kit.

As far as possible, installers should use the same kind of tension setting tools and equipment that the vehicle manufacturers use on the assembly line — and they must follow the correct procedure. Failure to do so may cause poor performance of the timing belt — and hence the drive system — with potentially disastrous consequences for the engine.

Installers should always keep the latest manufacturer's installation data to hand and check for updates on a regular basis. No design or installation issues emerged from the OES history. However, the Gates technical team noted that there were four potential installation errors that could arise during either procedure. Any one of these could lead to serious engine damage so the team concluded that installers would benefit from further technical support. Gates has issued a Technical Bulletin (No.12) and all distributors have been urged to advise garage customers about its content and availability.

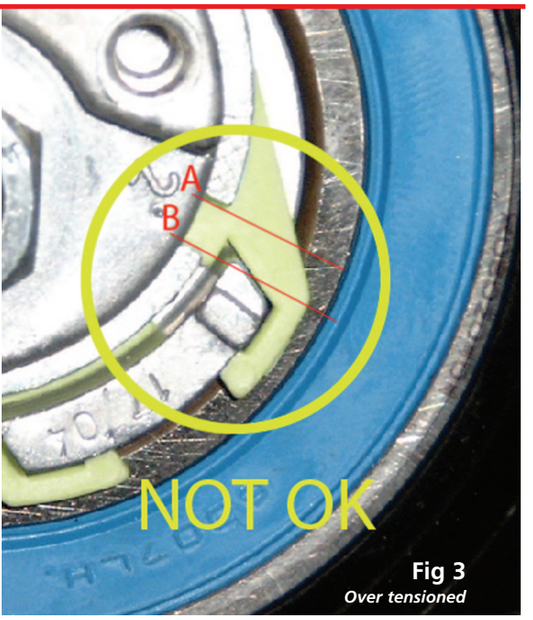

Fig 3
Over tensioned

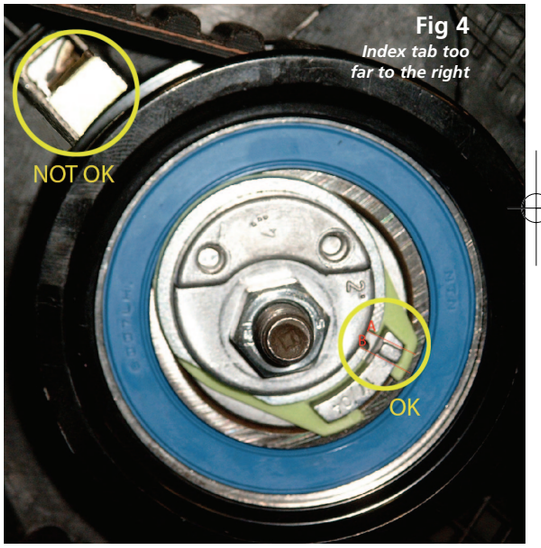

Fig 4
Index tab too far to the right

MORE INFORMATION

Gates has produced a Troubleshooting Guide for multi-ribbed belts, including tips for belt examination. For more information on this, the Gates Technical Bulletin No.12, as well as timing belts and tensioning equipment

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