

IAN CANDIDATE

source. However, the shredding and disintegration of the belt that had taken place bore all the signs of serration and chafing that 'foreign bodies' frequently cause. An internal source now seemed more likely. A careful internal check of the drive system and its associated components soon located the problem.

A metal guide on the crankshaft pulley had come adrift and become trapped behind the crankshaft. A serrated edge was clearly the cause of the trouble. Worn guides on the crankshaft pulley are not a common problem but there is no reason why similar problems could not arise with almost any vehicle at some stage.

The erosion and wear that had caused this component to fail had clearly taken place over an extended period — it could have happened at any time. However, inspection of the guides on crankshaft pulleys is not necessarily part of the replacement routine, so it may have been overlooked in any case. The combination of the speed of the timing belt and the gradual chafing would have been enough to destroy the belt in a relatively short period of time.

IMPLICATIONS FROM THE DIAGNOSIS

The good news from the garage technician and the garage proprietor's point of view was that the reason for

the premature failure of the timing belt was not the product of an incorrect fitting procedure. Furthermore, there were no manufacturing defects as far as the belt was concerned, which was good news for the factor and the manufacturer, too.

It was a straightforward case of metal fatigue, a product of wear and tear. However, had the damaged belt been simply replaced without further investigation into why it had failed prematurely, the second belt would have inevitably failed too. The garage would have had great difficulty proving that it had not been negligent in that case and suspicions would remain with respect to the initial failure as well. The consequences in terms of damage to the reputation of the garage in such circumstances are immeasurable.

TRAINING NEEDS

The detailed investigation by the Gates engineer produced an answer that cleared the garage of any blame, but it also exposed further training needs. Although the garage had invested in all the necessary tooling to carry out the task according to the recommended fitting data, the data does not include a full diagnostic routine that may help identify the true source of the problem. The appropriate vehicle, component or equipment manufacturer is a good source of training in diagnostic techniques.

SUMMARY AND RECOMMENDATION

A replacement timing belt failed in a very short time because a 'guide' on the crankshaft pulley had come adrift and become lodged behind the crankshaft, leaving an exposed serrated edge. It eventually caused the destruction of the belt. The garage took every reasonable precaution to identify the cause of the failure and to rectify the problem. Had the garage taken a more relaxed view, blamed the belt and merely fitted a second replacement, a second failure was inevitable.

The Gates inspector made two recommendations. Firstly, it was suggested that the garage proprietor should initiate some manufacturer-led training in the appropriate diagnostic techniques through its local motor factor. In a garage with more than one technician, there are likely to be differences in the approach to each timing belt procedure. In other words, standardisation without a formal procedure is unlikely.

The second recommendation was that the garage should agree a formal inspection procedure that each technician is bound to follow in every case. It should specify the appropriate tools to be used and list all of the components that should be inspected as part of a full drive system safety check-up. Such a procedure is an essential quality control where garages within a group are on separate sites. Moreover, it is the only way to protect the integrity of the garage and its staff.



need to know more?

- For more information on Gates timing belts and tensioning equipment circle readerlink 658