

# ER PICTURE

from the road. It was concluded that the whitish powdery substance was the remains of a foreign object that had been ground down.

Satisfied with the diagnosis, there was no alternative but to change the belt. The drive was cleaned to remove all remaining debris. A timing belt kit was installed, which included the tensioner — always worth changing at the same time as the belt. This is in accordance with good workshop practice. The installed tension of the new belt was tested and the engine was run for a few minutes to ensure no obvious signs of misalignment before the cover was replaced.

So, it was something of a surprise when the timing belt failed prematurely. Especially as white residue was once more present in the drive system. A Gates inspector was soon on the scene.

## ASSOCIATED WEAR AND TEAR

The Gates inspector was able to stand back and to consider the bigger picture.

Whenever a problem is identified within the drive system, it makes sense to examine all of the associated parts for any other ill effects or wear.



It's possible that there may have been some contributory factors at work.

The Gates inspector was able to identify a leak from the water pump, another form of contamination. Water/liquid in the drive is a problem because, once it becomes trapped between the belt and the pulley, it cannot be compressed. It is subsequently forced into the belt material, which causes the belt to swell and eventually to mis-mesh.

In such circumstances, it's the mis-meshing that ultimately causes premature belt failure. It seemed likely that this leak had contaminated the drive and caused the most recently installed timing belt to fail.

However, the new belt had been changed after contamination allegedly related to a foreign body of some sort. Two cases of contamination from different sources in the same drive within the change interval is either very unusual or very bad luck. The Gates inspector deemed it worthy of a closer investigation.

## ERROR OF JUDGMENT

The Gates inspector considered the possibility of a mis-diagnosis the first time around. So what else could have caused the powdery residue and why was it present once more?



Could it have been anything to do with a water leak? Under certain circumstances, the answer is 'quite possibly'.

A possible scenario is that when the mechanic discovered the residue in the original inspection, a slight leak from the water pump was overlooked. The key to the mystery is the coolant. Antifreeze contains a range of chemicals in solution. When freely exposed to the hostile environment inside the drive system, not only could pressure from the action of the belt force some of the coolant into the belt material (as outlined above), but it would leave behind the powdery residue that the mechanic was quick to spot.

It's likely, therefore, that water, rather than any other form of contamination, was involved in both cases. It was the same water leak each time.

## CONCLUSION

Although the mechanic was sharp enough to discover the contamination as part of a routine investigation the first time around, inexperience led to a mis-diagnosis and ultimately, the eventual premature failure of the timing belt.

The moral of the story is never let evidence that points to just one suspect cloud your judgment. Examine the other components and rectify any problems that there may be before replacing the belt. Always consider the bigger picture.

## need to know more?

- For more information on Gates timing belts and tensioning equipment circle readerlink 158