

DOUBLE JEO



There were no obvious alignment problems inside the drive system to explain why the timing belt on the Fiat Ducato had failed eight months and several thousand miles after a scheduled replacement. An initial examination provided enough evidence to suggest that the prime suspect was a simple and straightforward contamination by some form of 'foreign body'.

The result was surprising even for an experienced inspector from Gates. A close inspection of the main drive system revealed:

- Damage (a hole) to the timing belt cover
- A torn/ broken belt
- Abrasions to the side of the belt and in the 'land area'

The 'land area' is the flat section of the belt between each individual tooth. Indentations on the belt are often an indication that an object has become trapped between the belt and the pulley. The indentations were clear and this would have contributed significantly to deterioration of the belt's tensile strength.

When a belt fails prematurely, it is important to determine the root cause so that a recurrence can be prevented. The damage to the timing belt cover suggested that whatever had caused the belt to fail had entered through a hole in the casing. The condition of the belt suggested to an experienced eye that the foreign object had caused damage to the tensile cords across approximately $\frac{3}{4}$ of the width of the belt. The remaining $\frac{1}{4}$ was therefore unable to carry the full load and the belt failed, causing significant consequential damage to the engine.

Awareness about the damage that can occur if a foreign body is allowed into the drive system helps mechanics to appreciate the benefits of following a formal inspection and installation procedure for every belt replacement. The Gates inspector was called in by the local motor factor, keen to identify any training requirements; the move proved worthwhile when the inspector identified the source of the trouble.

Foreign bodies are usually:

- Broken components — part of a tensioner or pulley
- Liquid contaminants — fluid from a water pump or oil leak

Gates explains how the premature failure of a timing belt can be caused by problems outside the main drive system, and comes up with a practical resolution to the issue.

Manufacturer: Fiat
Model: Ducato
Engine: 2.8 TDi diesel

- External objects that enter the drive — stones, bolts, dirt

External objects require a point of entry and the hole in the timing belt cover would certainly have provided a clear opportunity.

