



Engine Parts & Timing Belts: Degrees of uncertainty in connection



Every mechanic wants to be able to diagnose vehicle problems with accuracy, but the dynamic nature of automotive design makes it difficult for even the most dedicated of experts. Gates have highlighted degrees of uncertainty in connection with scheduled timing belt replacements and the installation of water pumps.

The uncertainties voiced relate to:

- Belt replacement schedules in synchronous belt drives (SBDS)
- Belt 'V' kits
- Rates of wear in the drive
- Water pump replacement issues

The wide variety of differences in drive system layouts means that there is no standard procedure for installing every timing belt. What can be applied to every installation is good engineering practice.

Gates' advice is to replace the metal parts at the same time as the belt by installing a timing belt kit. This recommendation is based on the knowledge that modern belt tension is high, that belt replacement intervals have increased and that components in the drive system are subject to variable amounts of wear.

While many garages agree, some attempt to save the customer money by installing just the belt. It is a risky strategy that could cost both the customer and the garage much more over the long term

Change the pump

Mechanics have discussed installation procedures with other drive system specialists. The question of the best time to replace a water pump was raised in the context of preventive maintenance.



Gates believes that a scheduled timing belt change is the best time to replace the water pump as much of the preparatory work and chargeable time has already been done. Some garages would rather not do so because the water pump seems fine.

Waiting for a water pump to develop a problem is risky and assumes the driver will notice it in good time, says Gates. Who to get the parts from The debate moved on to the choice of water pump. A few years ago, Gates introduced a water pump kit in response to installer demand. Mechanics wanted the kits because some water pumps and belts need to be matched (the company now supplies two different kits for some models). If they are not matched, there is a risk of premature drive system failure.

For example, the pulley profile might not match the belt that drives it. In such cases, the belt takes excessive strain and may shred. If the belt is blamed and replaced, the new belt will not resolve the problem. If a drive system failure does occur for any reason, the choice of a single supplier will involve the garage in one investigation procedure rather than two. This saves time and eliminates the chances of a dispute about the origin of the failure. In the meantime, the vehicle has to be repaired and the bill has to be settled.

In the event of a premature drive system failure, inspection of the parts is likely. Gates argues that, wherever possible, timing belts and water pumps should always be changed at the same time and that they should be sourced from the same supplier because of the degrees of assurance it provides.

Workshop responsibility

Although the mechanics in this particular workshop agreed that given a drive system's susceptibility to wear and the need for specialist tools to maintain them, an overhaul of the complete SBDS makes sense, especially given the complex nature of some of the designs. However, they were unsure about their customer's response.

Gates' advice

Gates says that by replacing individual components, the responsibility of the mechanic is increased. For example, by replacing just the timing belt, a decision has been made that the tensioners and the water pump are good for another duty cycle. However, in the event of failure, the customer might be inclined to ask why the drive system was not subject to a complete overhaul. With this in mind, it's worth considering what preventive maintenance measures mechanics ought to be aware of in the Accessory Belt Drive System (ABDS), where there are many more components. The introduction of Overrunning Alternator Pulleys and Torsion Vibration Dampers, for example, means there are even more decisions to be made.

But perhaps that's a subject for another debate.