Engine Parts & Timing Belts: PowerGrip timing belt kit for Synchronous Belt Drive Systems (SBDS)

In 1990, Gates introduced the PowerGrip timing belt kit for Synchronous Belt Drive Systems (SBDS) to the market. At that time, only 6% of installations were timing belt kits. Since then, drive belt technology has been enhanced and timing belt tensions have increased as improvements in the belt materials have allowed replacement intervals to be extended. Today, 90% of installations are belt kits and it is accepted that changing the metal parts at the same time as the timing belt is good preventive maintenance practice – except when it comes to the water pump.

Drive development

High performance engines increasingly depend upon the reliability of drive systems that are designed to run for between 80 and 100,000 miles or more. The routing of the belt and the drive system layouts often differ between models in even the same range. What's more, OE manufacturers make adjustments to replacement components for existing drive systems or update their recommendations about component installation. Sometimes, this may demand a completely different approach to the installation of the belt or tensioner.

Until recently, water pumps were ignored when it came to regular checks and replacement procedures. However, the water pump bearing is likely to have done just as much work as all the other bearings in the drive system.

Water pump change

By their nature, drive systems are hostile environments. Premature failure is often caused by dirt thrown up from the road or water ingress, so a leak from the water pump could prove catastrophic to the SBDS. Over the long-term, it makes sense to change the water pump at the same time as the belt because:

1) Prevention is always a better policy than rectification;
2) To replace the water pump, the timing belt has to come off anyway;
3) A used belt cannot be re-fitted;
4) The water pump is subject to wear.

A complete preventive maintenance approach can guarantee customer satisfaction for years to come and there are other advantages. For example, Gates supplies a water pump kit, complete with pump, belt and all the metal parts required to perform an SBDS drive system overhaul. Sourcing the belt kit and the water pump from the same supplier in this way is a smart move. In the event of a problem, technical support is just one phone call or inspection away.

We recommend that kits should always be installed, rather than just belts. Changing the water pump as part of the belt kit makes economic sense both for the customer and the garage. It may save the cost of re-visiting the drive system to replace the water pump in a few months time.

Accessory Belt Drive Systems (ABDS)

ABDS drives are so much more sophisticated, these days. If it is becoming accepted that a drive system overhaul is the route to complete SBDS maintenance, the same argument applies to the ABDS where the number of components has increased. For example, Torsional Vibration Dampers (TVD) and Overrunning Alternator Pulleys (OAP) are becoming integral parts of the drive system, but the function of OAPs and TVDs is not always fully understood.

TVDs have been designed to take out vibrations produced by other associated parts. Unfortunately as they themselves begin to wear, problems occur elsewhere in the drive that may be incorrectly attributed to the belt or tensioner. Belt replacement alone will not resolve the issue.