



Timing Is Everything

For today's complex automotive engines as with many aspects of daily life, timing is critical. The most often overlooked item on an engine is the timing belt. An engine with overhead camshafts that uses a timing belt can have a limited life span if the belt is not replaced. Car manufacturers use belts instead of more durable chains because chains are noisier and cost more to produce. At best if the belt fails the engine will stop and leave you and your car stranded on the side of the road only requiring a tow to the shop for a belt replacement. At worst the engine might suffer severe damage to its internal components, the repair bill for a failed timing belt can be up to 15 times the cost of replacing the belt. Timing belts generally fail without warning, and on some vehicles they are almost as hard to check, as they are to replace. In most cases, your only protection is to change the belt at the manufacturers recommended intervals (generally 100,000 km).

Timing belts resemble an engine accessory serpentine belt in appearance, only they have square teeth on the inside drive surface. They usually are constructed of rubber reinforced with nylon. The belts are usually located inside a shielded or covered area at the front of the engine. To access the belt usually requires the removal of accessory items such as alternator, power steering, a/c compressor, then the covers or shields. The belts job is to transfer the rotation of the crankshaft to the camshaft. The rotating camshaft activates the valves, which provide air and fuel into the cylinders and expel spent combustion gases into the exhaust system.

The valves and pistons are constantly moving up and down at very high speeds. When the pistons are down, the valves are open; when the piston is at the top of its travel, the valves are closed. Some engines don't allow clearance between a valve at its lowest point and a piston at its highest (referred to as interference engines). The timing belt, therefore, is the critical link to ensure that these components stay in sync and don't collide. If collision occurs, damage to the valves, pistons, cylinder head, and cylinder walls can result, so this can be a very expensive repair. On some engines it may be recommended that you replace the water pump and belt tensioner during a timing belt job even if there is nothing wrong with it. This is because on some engines 90% of the labor to change the water pump has already been done with the timing belt job and it is considered good insurance to replace the pump at this time and saves the inconvenience and cost of doing a water pump replacement down the road.

Some examples of interference engines are Chryslers Breeze, Stratus & Neon 2.0L, PT Cruiser 2.4L, GM Tracker 1.6L, Cadillac CTS 3.2L, Honda Civic & Accord 1.8L, 2.0L, 2.2L, Mitsubishi (most engines), Nissan (most engines), Volkswagen Jetta, Passat 1.5L - 2.0L, Ford Probe 2.0L, Mercury Villager 3.0.

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