The Neighborhood Wrench
Sales and Service LLC

Timing Belt

Customer Education Sheet

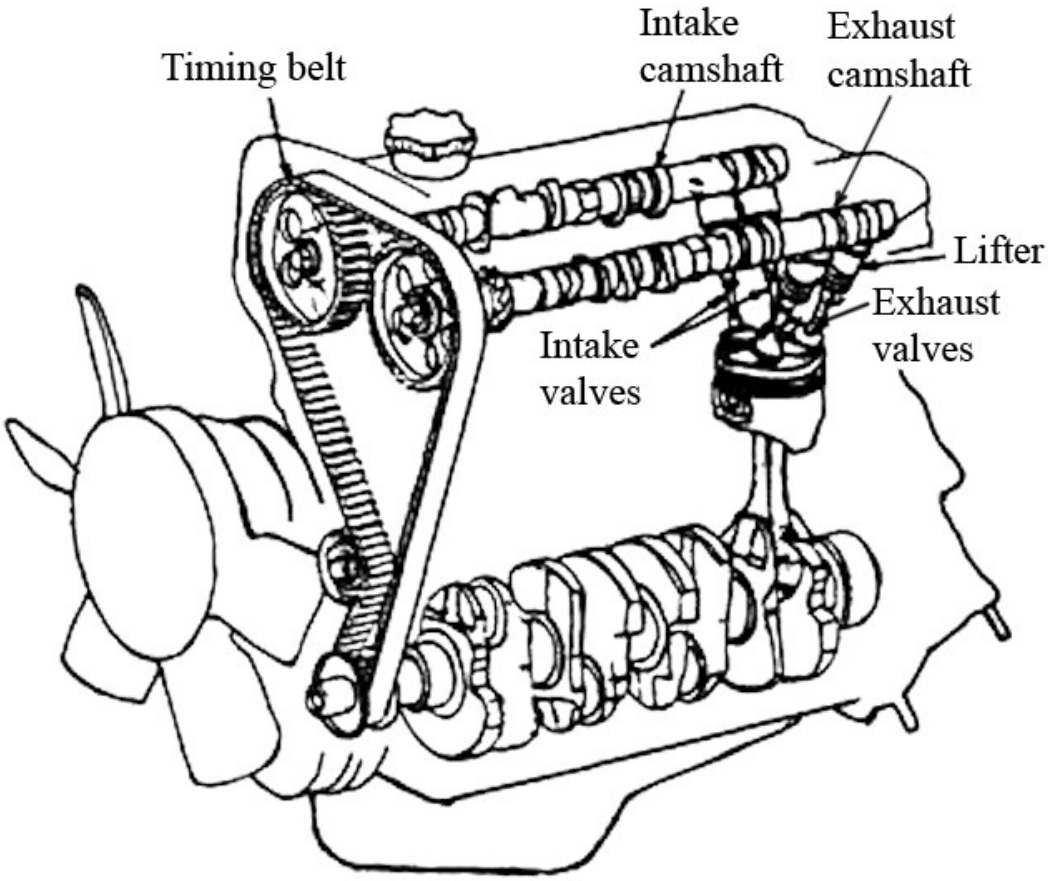
Smaller vehicles, especially those with 4 cylinders, often have a rubber timing belt inside the engine. This belt is not same as the serpentine belt on the outside of the engine.

How a Timing Belt Works

The timing belt makes sure that the camshaft and crankshaft rotate in sync, so the valves open and close at the right time. This “timing” is necessary for the engine to run properly. If the timing is off (such as when the belt slips) the engine will run poorly, if at all.

Timing Belt Failure

If the timing belt breaks, the pistons will continue moving (for a short time) but the valves will not open and close when they are supposed to. This results in the pistons hitting one or more valves, which can severely damage them or the engine itself. The engine will stall shortly after the timing belt breaks and it will not restart. Besides actually breaking, timing belts can crack, slip, or get stripped teeth. The timing belt tensioner(s) or pulleys can also fail. This can result in the belt becoming loose or actually derailing (coming off the pulleys).



Diagnosing a Bad Timing Belt

Timing belts are often located behind a plastic cover, which may or may not be easy to access. Once this cover is opened, the timing belt can be visually checked for signs of wear, damage, or contamination.

Timing Belt Replacement

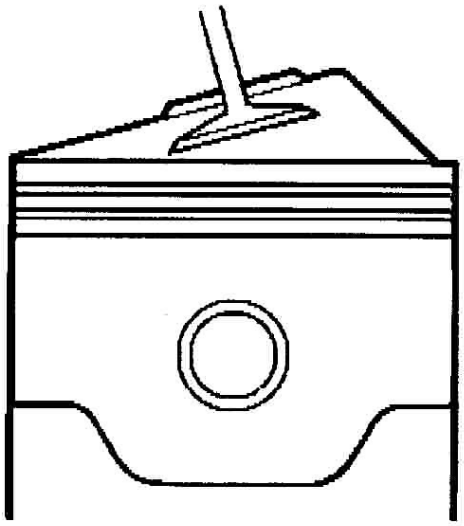
Timing belts should be replaced as often as the vehicle manufacturer recommends. The maintenance schedule in your owner's manual will list the timing belt replacement interval, but a common "average" is every 60,000 to 100,000 miles. Also, the timing belt tensioner(s), water pump, and pulleys are often replaced at the same time that the belt is replaced.

Cost to Replace a Timing Belt

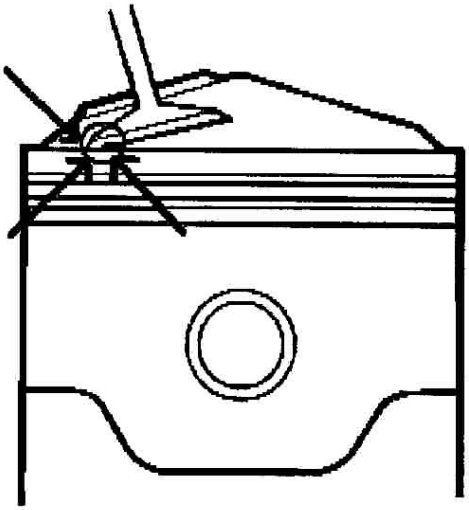
The cost to replace a timing belt varies quite a bit by vehicle, engine style, and other factors, but replacing it preventatively is usually much less expensive than replacing it after it breaks. This is because a broken timing belt often results in other collateral damage (such as bent valves) that can be very expensive to repair.

Interference vs. Non-interference (or Free-running) Engines

Engine designs can be classified as interference or non-interference. Interference engines offer better performance in a smaller size than non-interference engines do, which is why quite a few engines are interference. However, if the timing belt breaks on an interference engine, the pistons can hit the valves and this can cause severe engine damage. A non-interference engine has enough space between the piston and the valves that they will *not* hit if the timing belt breaks.



Non-interference



Interference