

Bizarre Serpentine Belt Failure

Has this happened to you?

The serpentine belt shows wear on half the surface; it appears to be scrubbing something but there is no obvious contact point.



I've encountered this phenomenon several times and never understood how a serpentine belt could wear on one side. Clearing the guide way and replacing the belt never solved the problem.

Eventually half the belt will disappear.



Look for the missing part to be tightly wrapped around the crankshaft and alternator pulleys. You'll have to clear each pulley and the pathway before installing a new belt.



Why did this happen despite the serpentine belt rotating nicely when the engine is at idle?

The reason is a bearing on an idler pulley is beginning to fail; as heat (friction) is generated, the pulley rotates more slowly creating drag on the upper side of the belt as it is scuffed across the pulley surface. The resulting surface friction and heat cause the belt surface to wear, the metal wire belts fail and wrap around the crankshaft and accessory drive pulleys. A sign of pulley bearing failure is belt squeal under acceleration with engine at operating temperature.

Interestingly, when I checked the idler and tension pulleys before installing a new belt, each pulley spun freely. Pulley rotation slows as the failing bearing begins to heat, increased friction slows its rotation and belt drag is created.

Yeah, but why wear on one side and not wear uniformly across the belt surface?

The reason is that a worn bearing allows the pulley to tilt slightly and the belt area contacting the tilted surface experiences reduced drag, hence less wear.

The solution is to replace all serpentine belt pulleys or open, clean and repack each bearing with grease. The latter is more cost effective. I keep a supply of

used serviceable pulleys harvested from donor vehicles that I've inspected and repacked the bearings.

Repacking serpentine "sealed" idler and tension pulley bearings is a quick and simple process; if you are interested in knowing how to service sealed bearings, contact me.



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For other tips, check out the Blue Ridge Chapter website.

<http://blueridgevolvonc.org/>