

## Belt Inspection Changes

Standard industry belt diagnostics call for replacement of a serpentine belt if it shows three cracks in a three inch section. This is a good rule of thumb for Neoprene, but not so good for EPDM. EPDM belts inherently resist cracking because of the increased elasticity, so a visual check for cracks is not a very good indicator of true belt wear especially since they can run 160,000 kilometers or beyond with no visual cracks. A far better indicator of wear on EPDM belts is material loss.

Serpentine belt drives are exposed to grit, rocks, salt and water. Over time, these contaminants along with slight misalignments result in wear of the rubber rib surface. Like tires running on a highway, serpentine belts gradually lose material over time which results in failure modes defined by changes in belt profile. One problem associated with material loss is how the belt fits around the pulley. Belts are designed to allow clearance between itself and the pulley. When material loss occurs, the clearance is lost; thus, eliminating a way for water and debris to be passed through the system. This can result in belt hydroplaning.

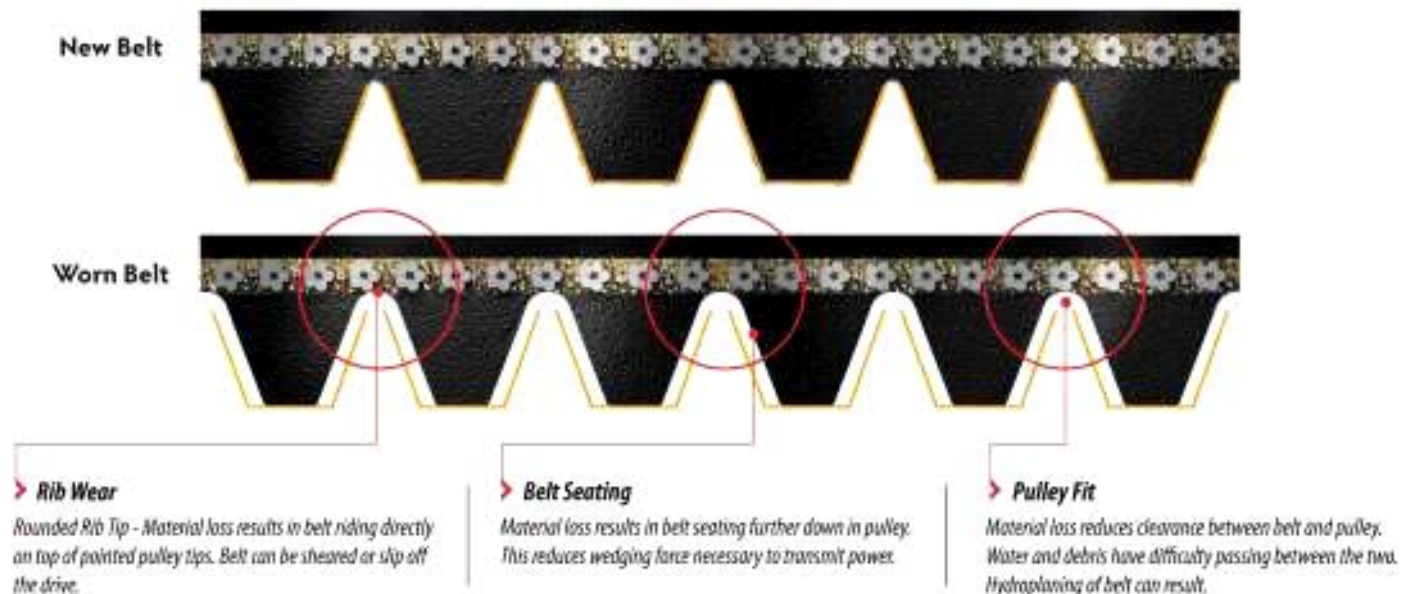
*Belt wear after 160,000 kilometers*



NEOPRENE



EPDM



- Over time, belt ribs lose material
- With material loss the space between the ribs increases
- The belt can “bottom out” on the pulley
- This causes belt slip and accelerated wear
- When water cannot channel out between the belt and pulley, hydroplaning (like a tire on a wet road) can result

So if a technician cannot count on belt cracks as a wear indicator on newer belts, what options does he have? This is where, like on many modern vehicle systems, good detective work pays off. Today's technicians need to look at the whole package: from the belt/tensioner performance, to vehicle mileage, to the operation of every other system component. If problems are found anywhere then the tech should always take a hard look back at the parts that transmit power to everything else which is the belt and tensioner. A persistent check engine light, reduced engine cooling, inconsistent power steering performance or poor A/C system performance are all signs of belt slip caused by wear.

The slightest material loss in belts means more to a car's drivability than you might think. Changing a belt during other component replacement is imperative to avoid come backs. The best practice is to begin checking belts at 80,000 kilometers to ensure that the belt rib is uncompromised and is not showing wear. Remember, as little as 5% rib material loss can create issues.

To measure belt wear a precision diameter (1.6 mm) tool can be set in the belt grooves. Place the long end of the tool between the ribs of the worn belt. If the tool sits high enough in the rib valley to expose the top of the tool the belt is okay. If the tool sinks into the valley between the ribs the belt has lost a significant amount of material and should be replaced. Look for a precision tool from ACDelco (available August 2009) to help in diagnosing belt wear.

