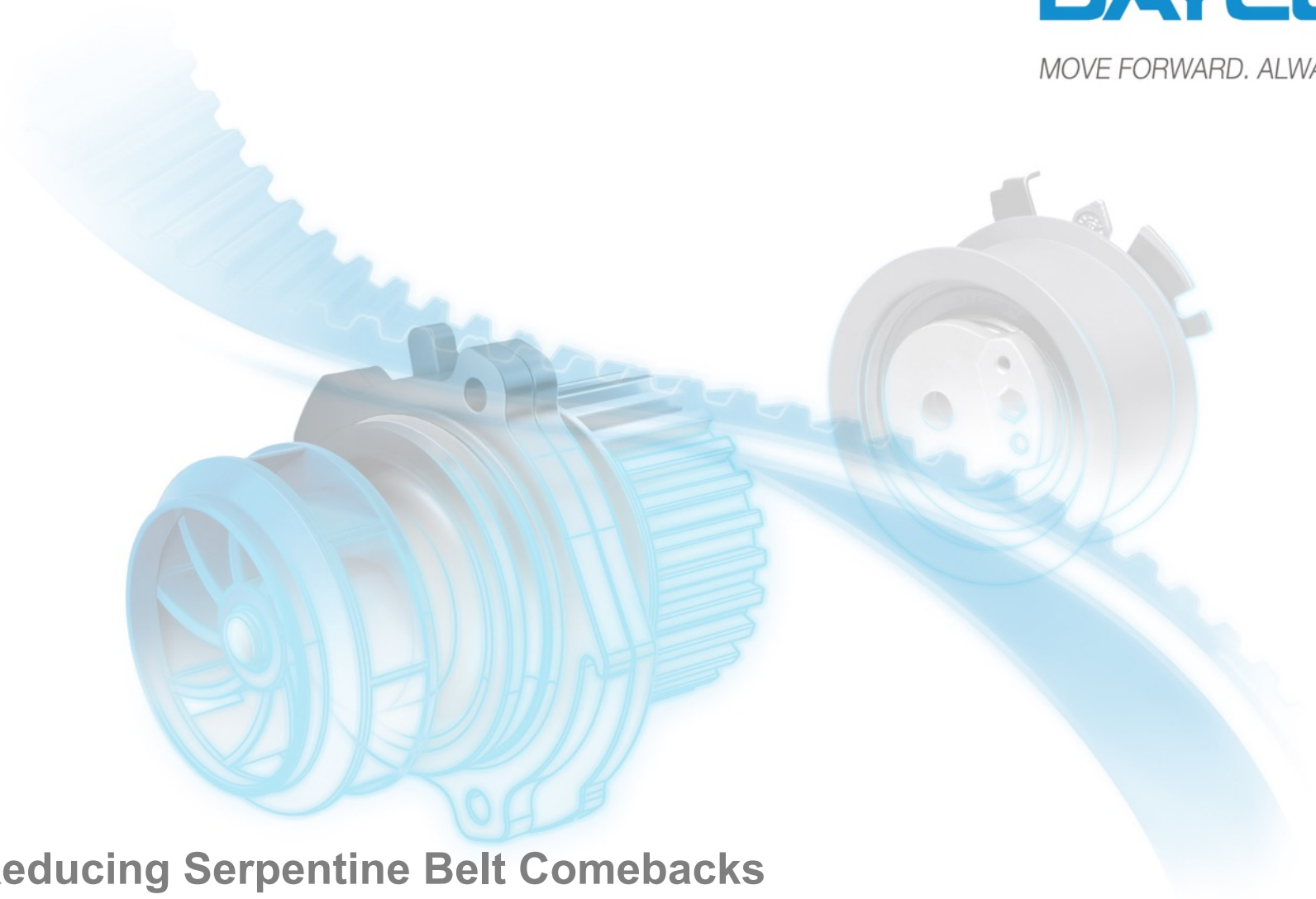
DAYCO®

MOVE FORWARD. ALWAYS.™



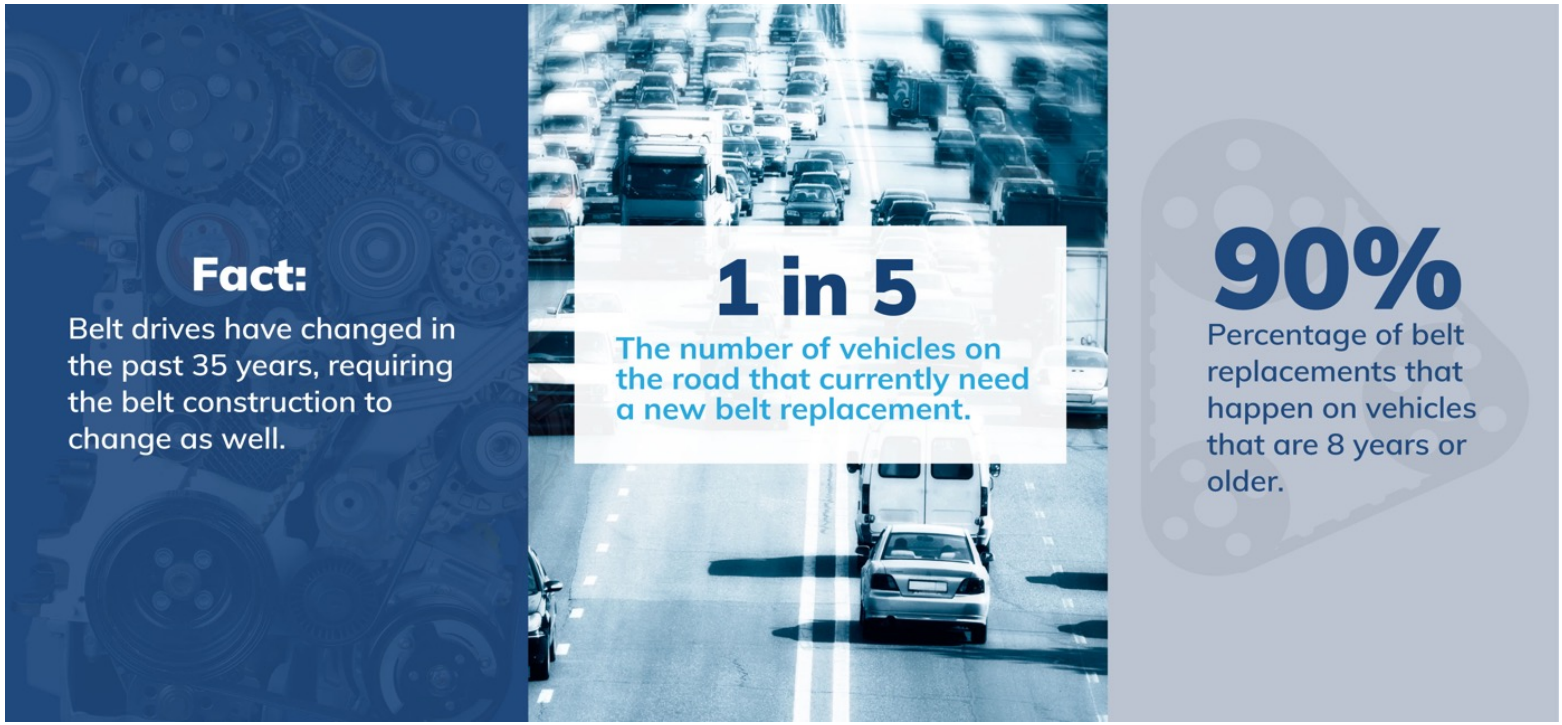
Reducing Serpentine Belt Comebacks

TECHKNOW SERIES

by DAYCO℠

Belts are Under Maintained

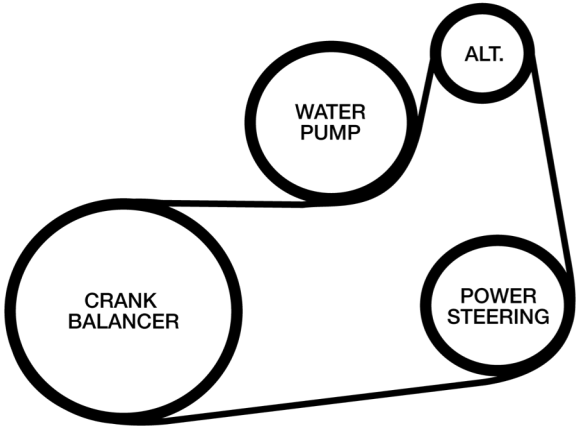
All serpentine belts need to be closely inspected to identify any signs of wear especially since belts perform in some of the most hostile environments because of high heat, contaminants and debris.



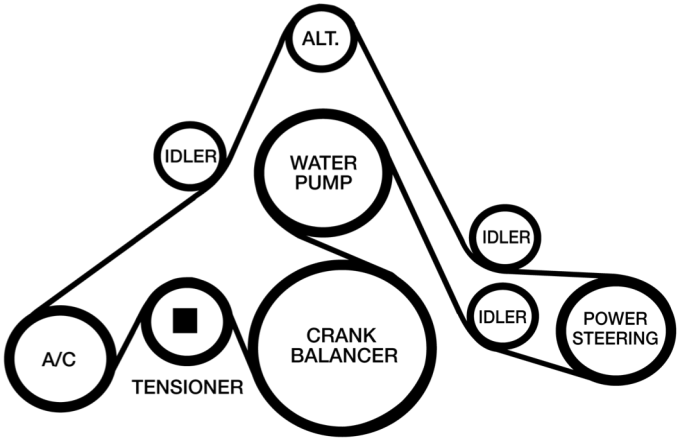
Evolution in OE Drive Design

Vehicles used to have multiple serpentine belts that only had up to four points of contact. Today, serpentine belts can have over 10 points of contact, creating very complicated drive systems and creating more opportunities for issues such as pulley misalignment or unwanted noise.

Today's belts are made to last longer than their predecessors. Years ago, belts were made with a Neoprene rubber compound that lasted 30-50,000 miles before failure or replacement. Today's serpentine belts are made with an EPDM (Ethylene Propylene Diene Monomer) compound and should be inspected for wear starting at 60,000 miles and replaced around 90,000 miles.

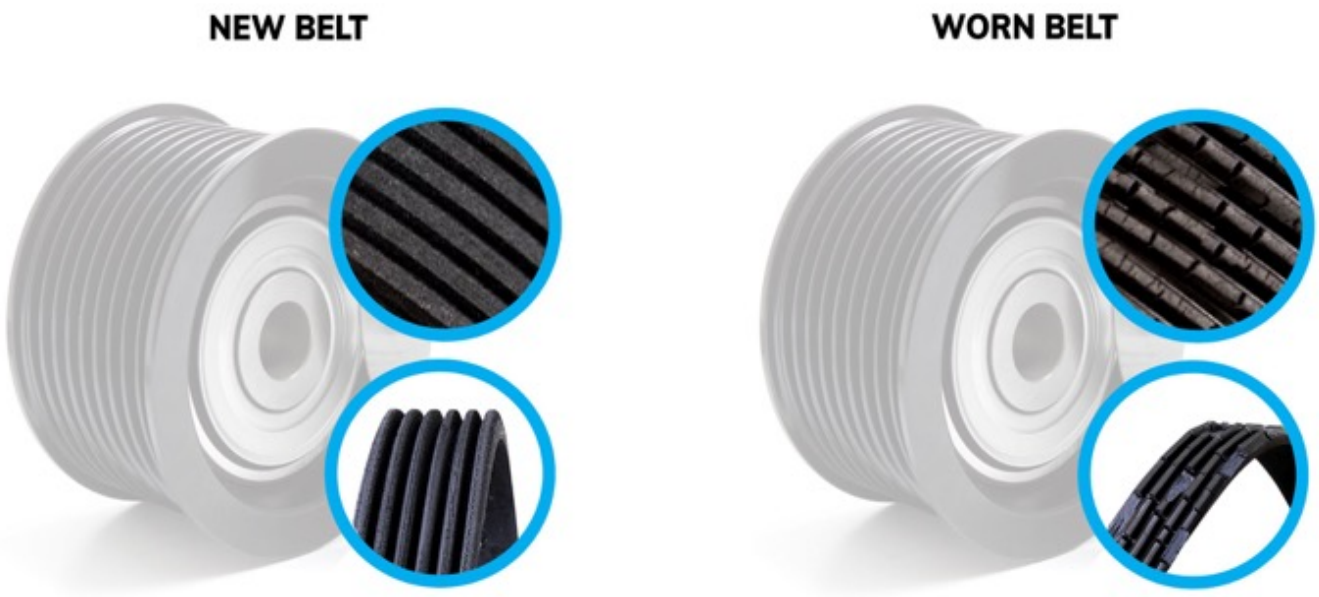


Systems have evolved from only a couple points of contact to upwards of 10 over the last two to three decades.



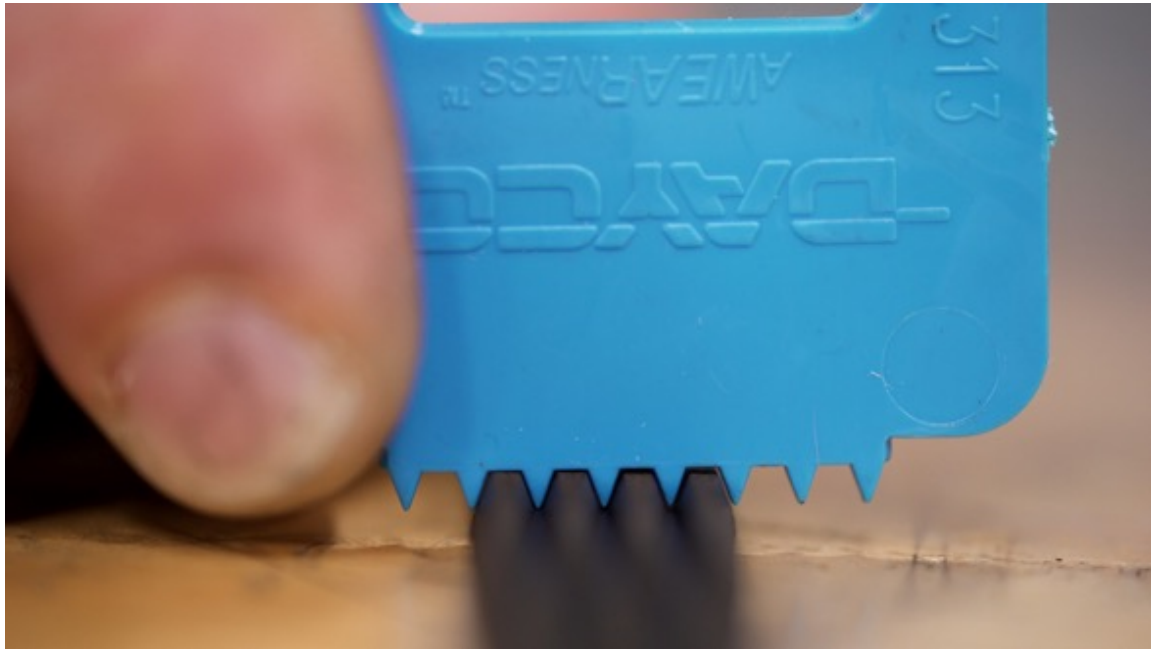
Identifying Belt Wear

- EPDM belts wear differently than the earlier neoprene constructed belts.
- A new EPDM belt wears similar to tire tread. It will have a traditional “V” profile in the grooves between the ribs.

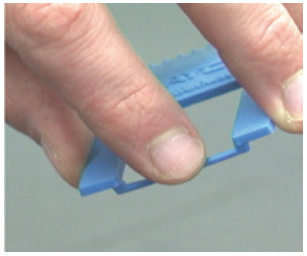


Measuring Wear

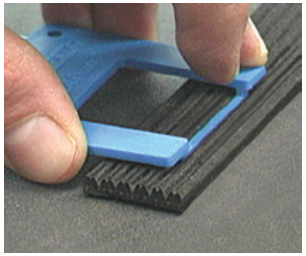
Dayco developed an innovative tool to help identify worn EPDM belts. The aWEARness™ gauge measures rib profile, rib depth and cracking.



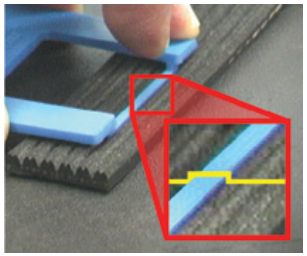
How to Use the aWEARness Gauge



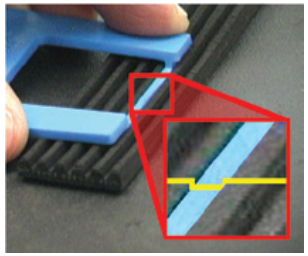
Grasp the tool like this when using the rib wear indicator bar.



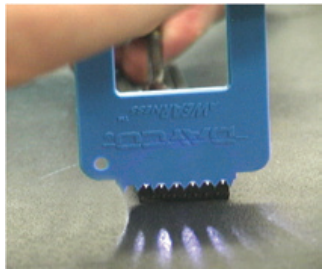
Keep the tool level – do not tilt it up or down across the belt.



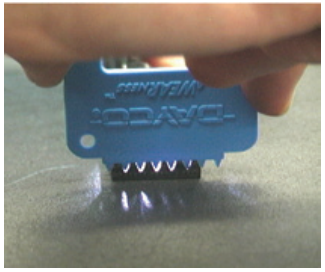
In a new belt, the top of the bar will be *higher* than the tops of the rib tips.



In a worn belt, the bar will be *lower* than the tops of the rib tips.



With the rib profile indicator on a *new* belt, there is neither side nor flank clearance on the ribs.



On a worn belt, the ribs “bottom out”, so voids appear on the flanks of the belts.

If there are four or more cracks in the window, we recommend replacement.

Check Belts at 60,000 Miles

Regular inspection of all drive belts, tensioners and accessories should be recommended once the vehicle passes 60,000 miles. And when the belt is worn and ready for replacement, all of its surrounding components should also be replaced.

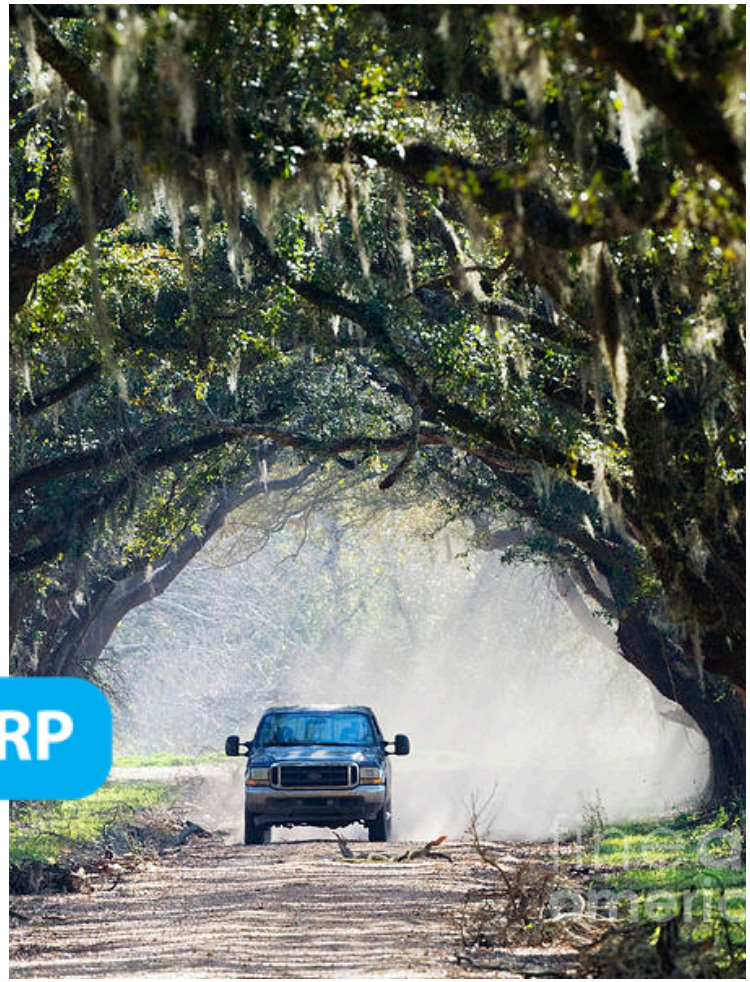
Troubleshooting System Noise

While many want to blame the belt, most noise in the front of engine drive system is due to misalignment issues or belt slip. The best way to troubleshoot is to conduct a water test. While at idle, spray water on the rib surface of the belt.

- If noise stops then resumes within a few seconds it is a misalignment chirp.
- If noise gets louder then returns to original level, it is a slip squeal.

The Chirp

- A sharp, high-pitched, repetitive noise of short duration
- Worse at low engine speeds (idle)
- May blend into one audible sound, but diminish in intensity



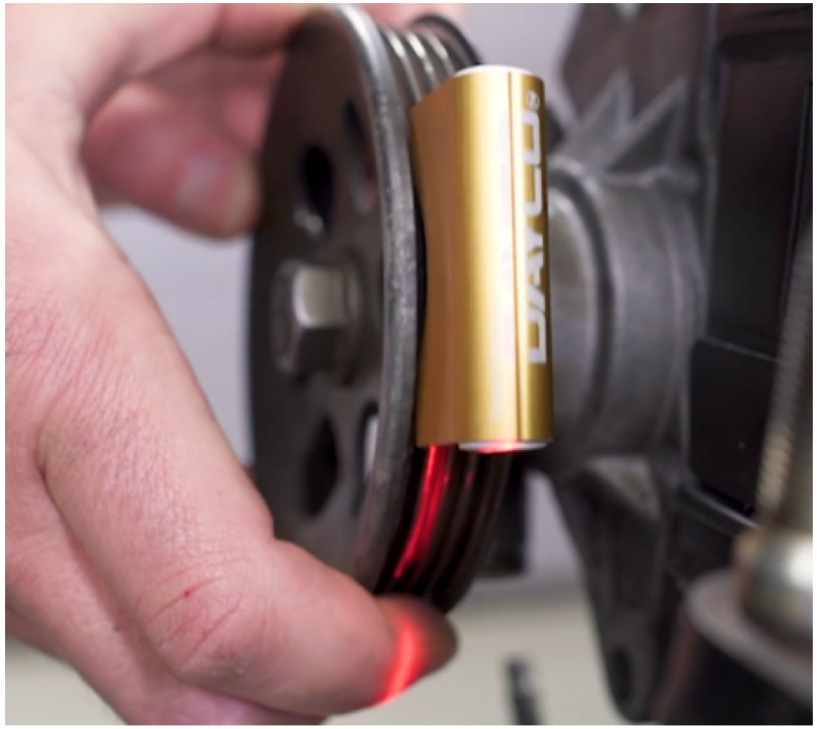
Top 5 Causes of Chirp:

1. Pulley misalignment
2. Worn belt ribs
3. Worn pulley bearings
4. Contamination
5. Low quality belt

Solutions for the Chirp

- Check pulley alignment with a laser alignment tool.
- Tighten accessory pulleys and brackets to mounting surfaces.
- Inspect and replace all accessories and pulleys that are difficult to rotate.

DEGREES OF MISALIGNMENT	FAILURE MODE
0° to 1.0°	Very low potential for chirp noise
1.0° to 1.5°	Potential for chirp noise
1.5° to 2.5°	High probability of chirp noise
> 2.5°	Extreme chirp noise / Probability of belt jump



The Squeal

- A high-pitched noise, typically lasting several seconds
- Increases in volume as engine speed increases

Top 3 Squeal Causes:

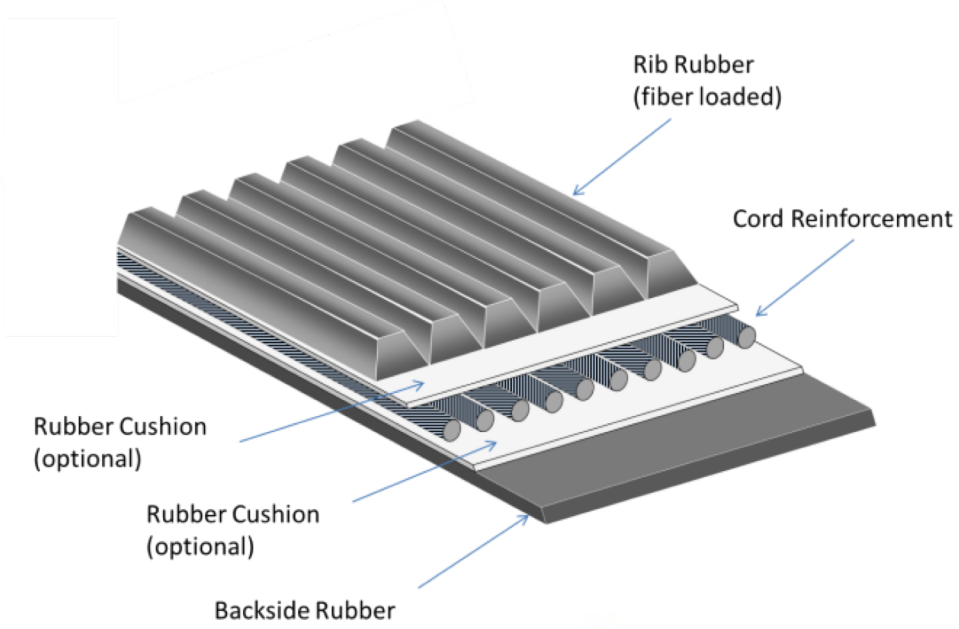
1. Belt and pulley slip
2. Low belt tension
3. Contamination

Solutions for the Squeal

- **Manual tensioners** – Check that they are properly tensioned to allow the belt to seat in the pulleys.
- **Automatic tensioners** – ensure it moves smoothly through its entire range of motion Replace tensioners where the bearing feels rough or if the pulley has excessive run-out.
- With the belt removed, inspect all accessory pulleys and idlers to ensure free and smooth rotation.
- Replace any belt that has been contaminated.
- NEVER try to solve issues with belt dressing.

Modern Belt Designs

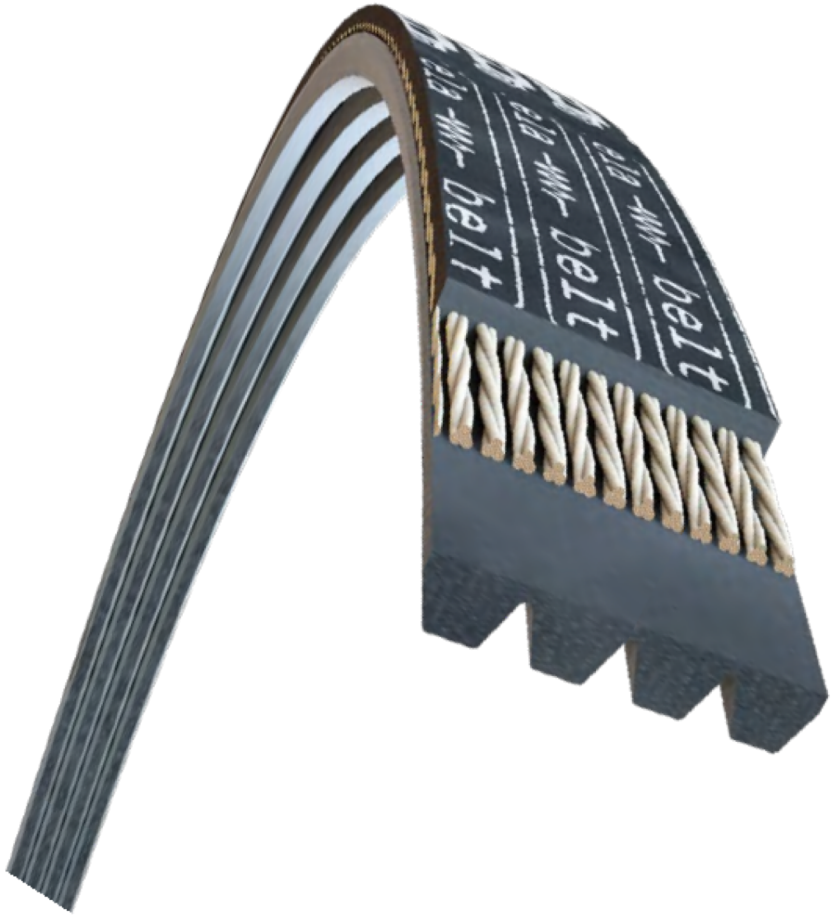
- Built for cars and light-duty trucks, Dayco's extensive line of serpentine belts are **engineered for high mileage, demanding drives** found in today's vehicles.
- **As the manufacturer of the first original equipment multi-ribbed serpentine belt**, Dayco's commitment to automotive product excellence and innovation is unwavering. Dayco serpentine belts deliver more than just original equipment (OE) required quality, they deliver the solution to troublesome drive problems.



Dayco ela® Poly-V Serpentine Belt

Specially designed for two to four point drives on light duty vehicles that do not require automatic or manual tensioning.

- Feature **self-tensioning capabilities** required by specific OE drives designed for a “stretch” belt.
- Incorporates a **wear-resistant EPDM rib material, along with a highly elastic EPDM cushion rubber** that surrounds the polyamide tensile cord, thus providing the required adhesion and flexibility to maintain lasting performance.
- Engineered with a polyamide tensile member, which allows for **high elongation required for installation.**

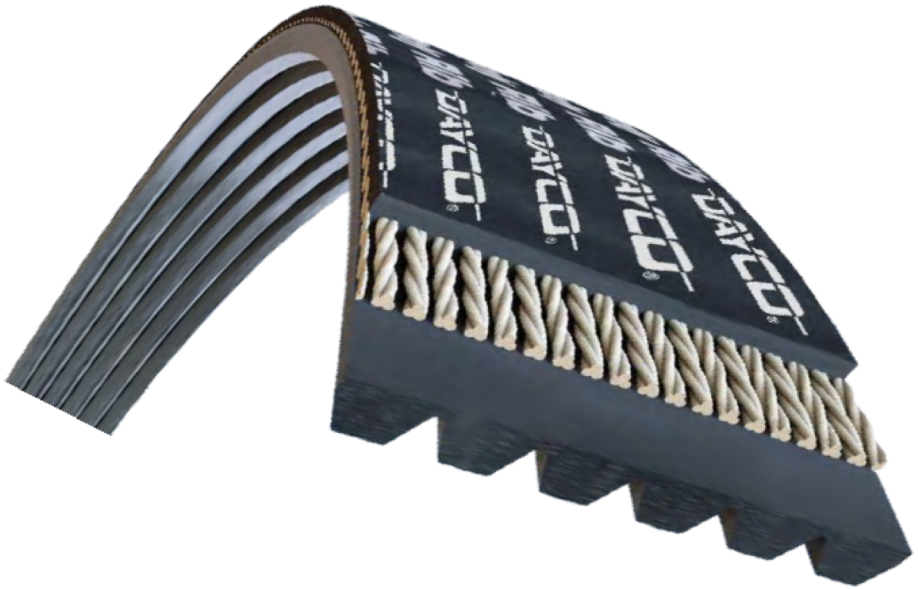


Dayco Poly-V Serpentine Belt

MOVE FORWARD. ALWAYS.™

Designed to provide full coverage for today's light duty vehicle market, especially vehicles with troublesome drives.

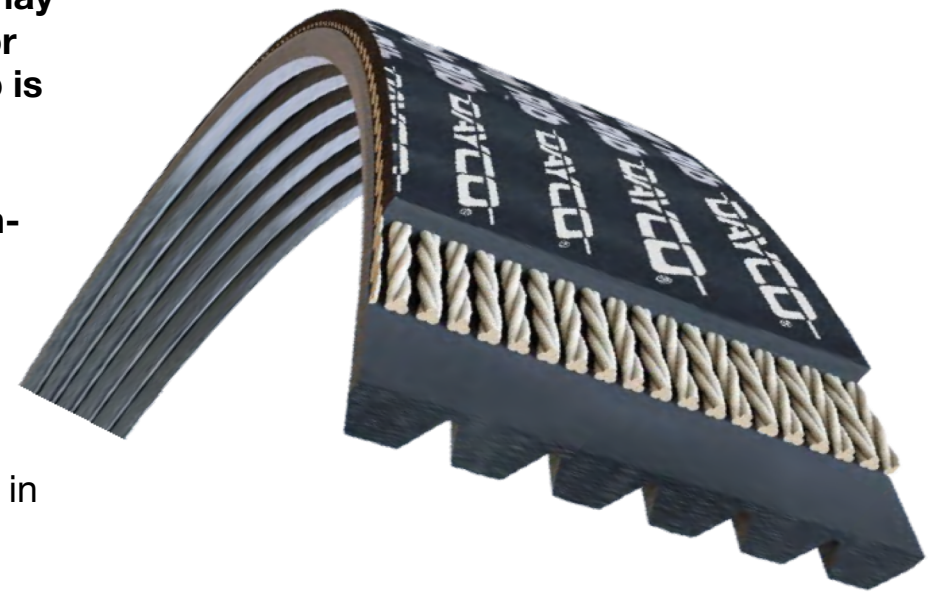
- Constructed with aramid reinforced EPDM compounds.
- Features a rib profile **engineered to conform to high mileage, worn or misaligned drives and help eliminate noisy belt conditions**.
- **Offers extensive flexibility** and longer service life, while handling higher workloads and temperatures.



Dayco Poly-V Aramid Serpentine Belt

MOVE FORWARD. ALWAYS.™

Specifically designed for applications that may have noise, vibration or harshness issues, or in-drive systems in which tensioner take-up is minimal.



- **Engineered to maintain a quiet, vibration-free belt drive system**. Unlike polyester-corded belts, the Dayco poly-V aramid serpentine belt will **resist the expected elongations, especially during high accessory loading**. This unique feature of length stability and minimal stretch can aid in difficult drives where span vibrations and tensioner movements are excessive.

- **Built with Dayco's specially designed EPDM rubber compounds to resist cracking** and perform better under extreme temperature ranges.

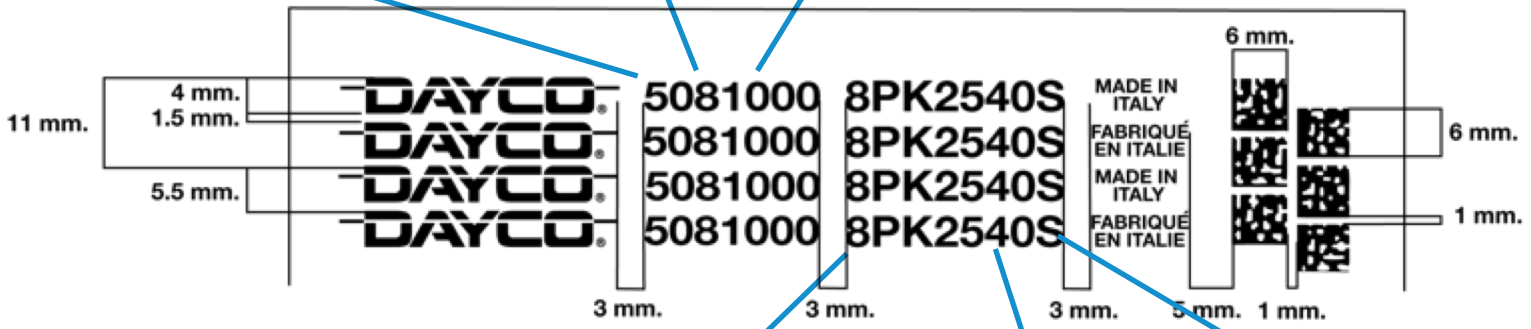
Part Numbers Explained

5081000
GLOBAL FINISHED IMPERIAL CODE

Belt Type Code:
5: Standard/Heavy duty EPDM3
6: Double-sided
A: Aramid
E: Ela

08: Number of ribs

1000: Belt effective length including 1/10th inch



8: Number of ribs
P: Poly-V belt
K: Rib profile

2540: Belt effective length (mm)

S: Code of EPDM3

8PK2540S
GLOBAL FINISHED METRIC CODE

Finding the Right Part, the First Time

Use the Dayco Parts app or website to search for the right part:

- VIN lookup
- License plate parts lookup
- Product specifications
- Interchange search
    - Competitors
    - OEM

Test Your Knowledge

1. **Today's EPDM belts can last around how many miles?**
   a) 50,000 miles
   b) 105,000 miles
   c) 90,000 miles

2. **A new belt's grooves are shaped like what letter?**
   a) U
   b) V
   c) C

3. **Belt "squeal" noise is caused by**
   a) Belt and pulley slip
   b) Low belt tension
   c) Contamination
   d) All of the above

Go to the next page for the correct answers.

Test Your Knowledge Answer Key

Question 1 - c) 50,000 miles

Question 2 - b) V

Question 3 - d) All of the above

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Thank you

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