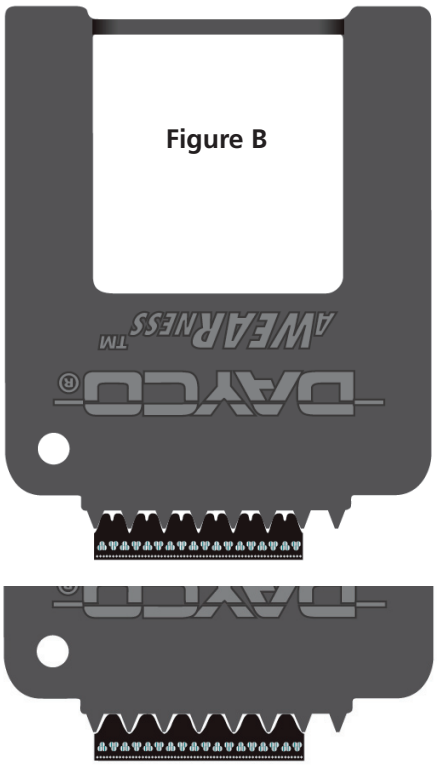
Is that belt really worn out?

With advances in drive belt technology, the service life has been extended and the materials and their characteristics have changed significantly. Dayco has developed a tool to help mechanics quickly and easily determine when a belt is worn out.

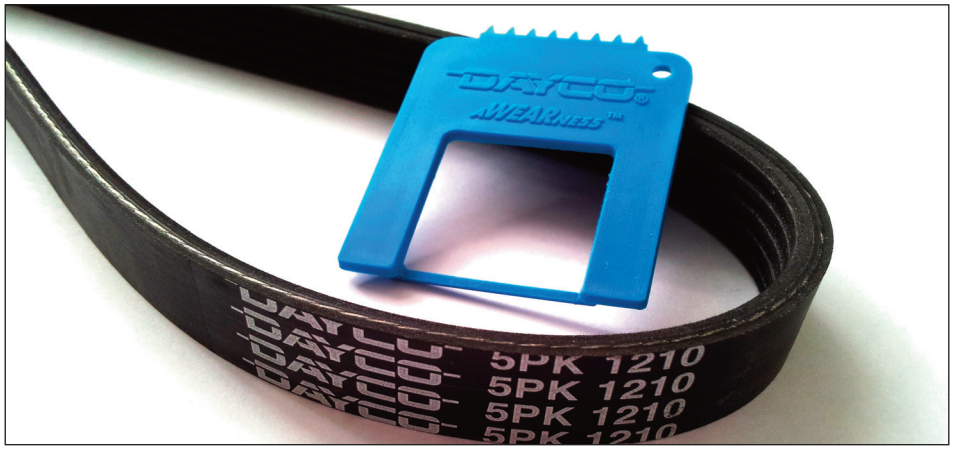
To provide the motorist with a high standard of service and repair, a mechanic must make sure that they regularly check the condition of all multi-rib auxiliary belts and replace them when the signs of wear become visible.

However, what are the signs of a worn out belt and how can the degree of wear be judged accurately, to ensure that a worn belt is replaced, but a serviceable belt is not replaced unnecessarily?

Historically, multi-rib belts were made from neoprene compound, had a service life of between 50,000 to 80,000 miles and the signs of wear were generally obvious in the form of cracking, chunking (small sections of the belt broken off), glazing or splitting. Today's belts, in contrast, are made of extended-life rubber compound (EPDM), have a service life of around 100,000 miles and the wear signs are more difficult to detect, as these belts tend to wear through material loss, in the same way a tyre would.



A new or serviceable belt, top, and a worn belt that needs replacement, bottom.



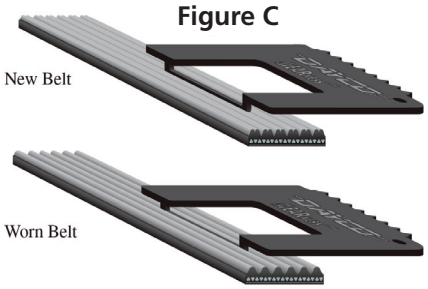
As a result, the 'V' profiles of the ribs on the belt begin to wear down and start to resemble a 'U' and not a 'V'. As the profile changes, the contact area of the belt on the pulley is reduced, and the efficiency of the belt drops. This wear can lead to slippage and affect the performance of the belt, as well as make it very noisy.

In order for workshops to quickly and accurately measure the wear of these belts, Dayco has produced an easy-to-use tool that makes the process extremely straightforward. The Dayco 'a-WEAR-ness gauge' is a small but robust plastic tool, that allows the technician to perform three visual checks, that will clearly reveal the condition of the belt.

First, the profile of the ribs can be measured using the 'comb' end of the tool which, when held against the ribs, will show whether there is any side clearance between the teeth of the 'comb' and the side of the ribs. A new (or still serviceable) belt will show no side clearance, as shown in Figure A. On a worn belt, the base of the teeth will bottom out on the top to the ribs and reveal a gap between the sides of the ribs and the teeth of the tool, as shown in Figure B.

The second check will show the wear on the ribs themselves. An indicator 'bar', on the opposite end of the tool to the comb, will sit above the tops of the ribs when placed lengthways along the groove on a new or serviceable belt. On a worn belt, the bar will sit below the top of the ribs. This shows that material has worn away and the gap between the ribs has increased. (Fig C)

A final check, for cracks, allows the technician to view the ribs through a 25mm square 'window'. If four or more cracks are visible through the window, then the belt must be replaced before failure occurs.



A new or serviceable belt, on top, and a worn belt that needs replacement, on bottom.

The condition of the auxiliary belt should not be overlooked, particularly as they tend to drive more components on a modern vehicle and the environment in which they operate is very hot and can contain harmful contaminates. Although auxiliary belt failure is not usually as catastrophic as the failure of a timing belt, it will nonetheless stop the vehicle and necessitate its recovery. Dayco recommends that a thorough inspection of all drive belts be undertaken after the vehicle has reached 75,000 miles. It is also good practice to thoroughly inspect all drive belts whenever the timing belt is replaced.

The Dayco aWearness gauge is available from Team PR Reilly on 01-832-0006.

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