

CDX Handout Activity: HA245

Student/Intern information:

Name Date Class

Replacing an engine drive belt

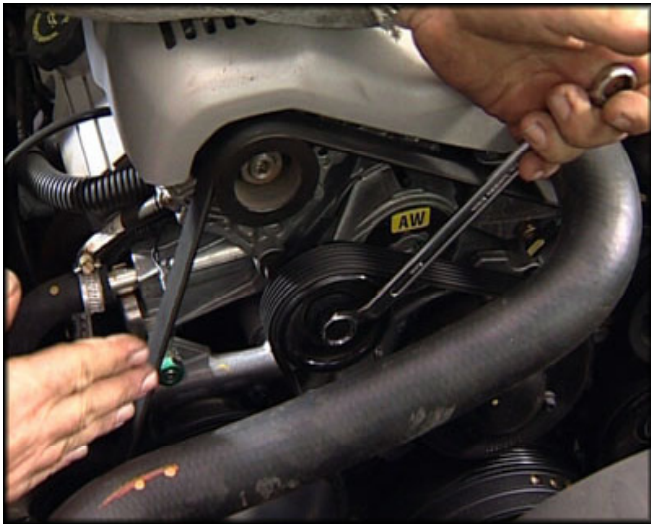
Summary

Many vehicles require the technician to manually adjust the tension on the belt. Other vehicles have an automatic spring tensioning system. Depending on the system used on the particular vehicle, you should always follow the manufacturer's service instructions. The objective of this procedure is to show you how to remove and replace an engine accessory drive belt.

Part 1. Preparation and safety

Objective

- Remove and replace an engine accessory drive belt.



Personal safety

Whenever you perform a task in the workshop you must use personal protective clothing and equipment that is appropriate for the task and which conforms to your local safety regulations and policies. Among other items, this may include:

- Work clothing - such as coveralls and steel-capped footwear
- Eye protection - such as safety glasses and face masks
- Ear protection - such as earmuffs and earplugs
- Hand protection – such as rubber gloves and barrier cream
- Respiratory equipment – such as face masks and valved respirators

If you are not certain what is appropriate or required, ask your supervisor.

Safety check

- Never try to inspect belts with the engine running.
- Always make sure that you wear the appropriate personal protection equipment before starting the job. It is very easy to hurt yourself even when the most exhaustive protection measures are taken.
- Always make sure that your work area/environment is as safe as you can make it. Do not use damaged, broken or worn out workshop equipment.
- Always follow any manufacturer's instructions in relation to personal safety and prevention of damage to the vehicle you are working on.
- Make sure that you understand and observe all legislative and personal safety procedures when carrying out the following tasks. If you are unsure of what these are, ask your supervisor.

Points to note

- There are two types of drive belts:



- **V-type**

A V-type belt has a profile that looks like the photo below, and sits inside a deep v-shaped groove in the pulley wheel. The sides of the V-belt contact the sides of the groove

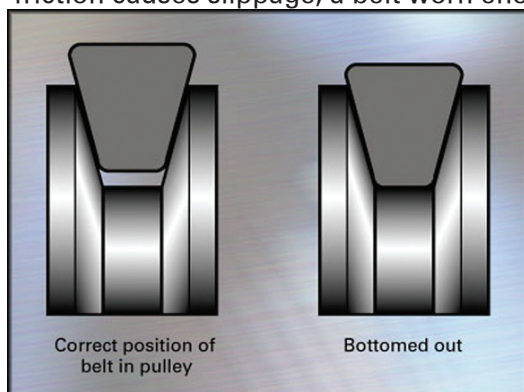


- **Serpentine**

Serpentine-type belts have a flat profile with a number of grooves running lengthwise along the belt. These grooves are the exact reverse of the grooves in the outer edge of the pulley wheels; they increase the contact surface area, as well as prevent the belt from slipping off the wheel as it rotates.

- **'Bottoming-out'**

When a V-type belt becomes very worn, the bottom of the V-shape may contact the bottom of the groove in the pulley, preventing the sides of the belt from making good contact with the sides of the pulley groove. This reduced friction causes slippage; a belt worn enough to bottom-out should be replaced.



- Many vehicles require the technician to manually adjust the tension on the belt. Other vehicles have an automatic spring tensioning system. Depending on the system used on the particular vehicle, you should always follow the manufacturer's service instructions.
- There are a number of different types of tension gauges. Follow the operating instructions on the tool. If you don't have a tension gauge, you can estimate the tension by pushing the belt inwards with your hand. If it's correctly tensioned you should be able to deflect the belt about 1.25 centimeters for each 30cm of belt (half an inch for each foot).



Part 2: Step-by-step instruction

1. Loosen tension and remove belt

Locate the adjustment fastener and loosen it. This is usually on the alternator mounting or on a separate pulley wheel. Move the adjusting mechanism in far enough to allow you to remove the belt. Some vehicles use an automatic spring tension system. In that case, pull the tensioning device back so that you can remove the belt.

2. Inspect drive & driven pulleys

Check the drive and pulley wheels. Look for cracks and other forms of damage. Check that there is no sideways movement indicating worn bearings, and spin the pulley wheels by hand to check that the bearings are rotating freely.

3. Select correct replacement belt

Obtain the correct size and type of replacement belt specified in the workshop manual, and compare it with the belt you have just removed. They should be very similar, although the old belt may have stretched in use.

4. Install V-belt

Install the new belt, making sure that it is properly seated in the V-shape groove, or the multiple grooves in the pulley, depending on its construction.

5. Install Serpentine belt

If the belt is a Serpentine type, then make sure that it is the correct width and squarely aligned in the pulley grooves. If it is not correctly aligned, the belt will be thrown off the pulley wheels.

6. Correctly tension new belt

Tension the belt using a wrench and a pry bar, then check it with a tension gauge. With automatic tension systems, gently allow this to apply the tension to the belt.

7. Start the engine

Start the engine, and observe the belt to make sure that it is properly seated and operating correctly. Stop the engine again, and recheck the tension.

1. Serpentine grooves are the exact reverse of the grooves in the outer edge of the wheels.
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Score / 5

Supervisor/Instructor information:

Name Signature Date