



RIGHT ON

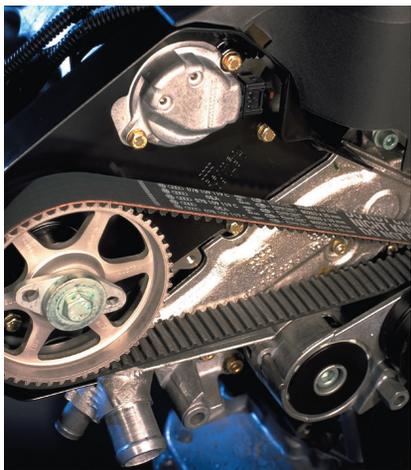
Replacing a timing belt is not always straightforward. With some models, additional care is required. As part of a regular feature belt manufacturer Gates offers invaluable technical tips and advice to help you save time and money.

CASE STUDY I

Engine: VW/ Audi 1.9 diesel group

Problem: Belt differentiation

Occasionally, a vehicle that's been booked in for a standard belt replacement job can provide the installer with unexpected problems. The original VAG 1.9 diesel engine group, using belts with 137 teeth (5223XS), presents some good examples.



Timing belts on some engines are occasionally enhanced at OE level and this can mean that a correctly supplied part looks different from the belt due for replacement (see Case Study 2 for more details).

However, a visual difference doesn't always mean that the replacement belt is incorrect. It might mean that the installation procedure needs a little extra care.

Gates supplied the OE belt for the original VAG 1.9 diesel engine group and subsequent enhancements mean that the replacement belt, (5223XS), has been improved. It now displays a different tooth form than the original belt, although identical to the current OE belt 028 109 119P.

The new profile is designed to run in the same pulleys as the former OE belts and works better than any formerly approved OE belt. However, the procedure for installing the new profile belt has changed and that's where it gets more difficult.

Not every installer appreciates the change.

The updated guidelines laid down by VW/ AUDI are:

- The camshaft pulley must be removed by knocking a pin through the hole in the rear timing belt cover.
- The belt has to be fitted around the pulley.
- Refit the pulley and belt at the same time.

If this method is not followed, it is impossible to install the belt. The belt seems too short. It cannot be fitted over the pulleys in the normal way.

Even with this better Gates' belt problems can still occur on '96, '97 and '98 models, on which the injection pump bracket could cause misalignment. The result can be that the timing belt runs against the upstanding flange of the vibration damper (installed on the crankshaft) and also against the tensioner pulley flange. The width of the belt reduces slowly, producing a very shiny sheen on the side of the belt. Typically, it can reduce from its original width of 1 in., to something closer to $\frac{3}{8}$ in — before it breaks.

When this occurs, the injection pump bracket has to be replaced by the newer version (same OE number).

It makes sense to enlist the help of a second person in order to install the new bracket.

Lift the bracket at the back (closest to the gearbox) while pushing down at the front (on the belt side).

The three fixing bolts can now be tightened (first the front bottom one, then the front top one, then the rear one).

Make sure the pulleys are clean

“However, a visual difference doesn't always mean that the replacement belt is incorrect. It might mean that the installation procedure needs a little extra care.”

TIME

before installing the new timing belt. It is wise to let the engine idle for a few seconds before the vibration damper (the crankshaft Micro-V pulley) is installed again, in order to ensure the belt is no longer tracking. The belt should sit between 1.5 to 4mm away from the pulley front side.

It is very likely that the injection pump will need adjustment. A calibration check — also rarely appreciated — is essential.

CASE STUDY 2

Model: Renault 1.9 Diesel engine group

Problems:

- A** Belt recognition
- B** Ingress from debris
- C** Tension incorrect

A. Double-check the engine specification on the vehicle. The Renault 1.9 Diesel engine group uses no fewer than six different — but very similar looking — timing belts. These include alternatives for the very similar sounding 1.9D and 1.9TD, as well as the 1.9DCi and 1.9Dti models.

Basic security checks can be flawed. All of the belts have the same number (153) of teeth. The width difference can vary by as little as 0.6mm, from 25.4 to 26mm between belts.

The profiles can be different, so



it's always worth taking a sideways look at the belt. For example, the belt with a 58 tooth profile has teeth that go straight up and down. The teeth on the belt with 76 tooth profile slant sideways. However, a profile check is not a guarantee that the belt is correct because the construction of the replacement belt may be incorrect.

Three fail-safe checks are always worth making:

- Check the original Renault part number if still visible on the old belt.
- Look up the engine code on the engine block. It's near the junction with the gearbox.
- Always cross reference the replacement belt with the OE specification.

B. Timing belt problems commonly occur when basic tension rules are overlooked.

For instance, Renault prescribes a specific tooling procedure in order to ensure the correct operating tension. At aftermarket level, many installers do not use an appropriate belt tension-measuring gauge. Instead, a 'guesstimate' is often made. The installers often use the 'thumb' — in other words, they rely on 'experience' rather than instrumentation.

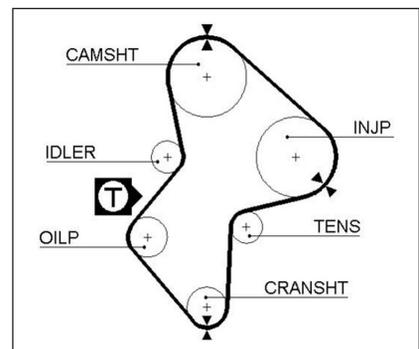
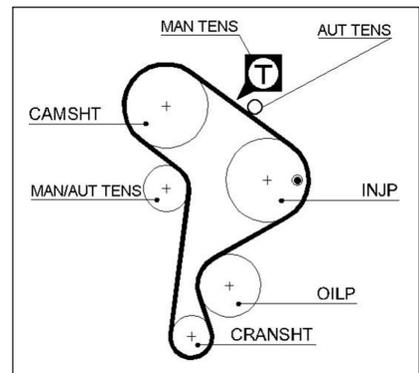
Consequently, the belt is often set too slack and rubs on the injection pump pulley cover. The evidence of this is plain for all to see. Marks on the belt itself indicate this problem clearly.

Nearly all of these models are equipped with a manual tensioner. The tension can be checked (and adjusted if needed); using a specialist tool. The Gates STT-I tension tester is suitable for this job. It replicates the sonic



testing process used to test timing belt tensions on the assembly line.

The spot where the tension has to be checked can be found on each timing belt box. Alternatively, check the brochure supplied with the STT-I.



need to know more?

- For more information on Gates timing belts and tensioning equipment circle 490.