



SUBJECT

VAG engines: 1.6 TDI, 2.0 TDI
(EA288 engine)

PRODUCTS DESIGNATIONS

VKM 11278

CAR MANUFACTURERS - BRANDS



AUDI: A3, A4, A5, Q3, Q5, TT

SEAT: LEON, TARRACO (KN2), ALHAMBRA (710, 711), ATECA (KH7, KHP), IBIZA V (KJ1)

SKODA: OCTAVIA III, KAROQ, RAPID, SUPERB III, YETI (5L), KODIAQ (NS7, NV7)

VW: T-CROSS (C11), GOLF VII, BEETLE, SCIROCCO III, PASSAT B8, CADDY IV



SKF Kit

OE number (equivalency)

VKM 11278

AUDI / SEAT / SKODA / VW → 04L 109 243 B / 04L 109 243 G / 04L 109 243 C / 04L 109 243 S

Warning:

The tensioner VKM 11278 is also included in VKMA 01278, VKMC 01278, VKMC 01278-1 & VKMC 01278-2

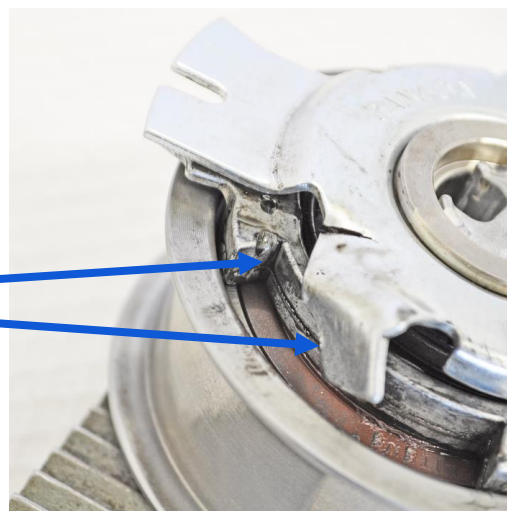
Case study VAG TDI engine, 1.6 TDI, 2.0 TDI (EA288 engine)

Problem: broken tensioner back plate / broken tensioner spring – VKM 11278

We have investigated a large number of complaints in which the spring or the back plate of the VKM 11278 tensioning pulley were damaged. The resulting failure of the tensioning pulley caused several engine damages.



The back plate is severely deformed and torn.



The end stops show deformation.



When investigating the tensioning pulley, it is often found that the spring of the tensioning pulley is broken or has jumped out of the fixation.

During the inspection, we did not find any signs of a material or manufacturing defect on the components. The tensioner shows heavy impact marks with material incorporation on both end stops. The nose of the back plate, which moves between the end stops without contact when the tensioner is set correctly, was severely deformed due to frequent and impermissible impact on the end stops.

Conclusion:

- Spring breakage due to abnormal tensioner oscillation.
- Spring breakage due to abnormal operating conditions with high torsional vibrations, caused by incorrect installation.

Comment:

- The tension spring is designed for an oscillation of $\pm 3^\circ$. This is the oscillation travel that occurs under normal operating conditions and correct adjustment of the tensioning pulley, as well as correct interaction of all belt drive components.
- Depending on the application, hitting the end stops means an oscillation travel of $30 - 50^\circ$!
- A tension spring is designed to withstand a certain number of impacts against the end stop, but not for frequent or constant impacts against the end stop.

Avoiding adjustment errors during installation

Note: It is mandatory to follow the installation steps exactly!

When replacing the tensioner and belt, the crankshaft, injector pump and camshaft must be locked so that the synchronization is maintained.

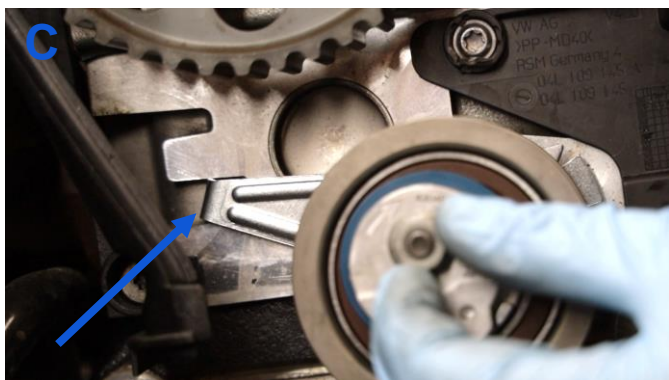
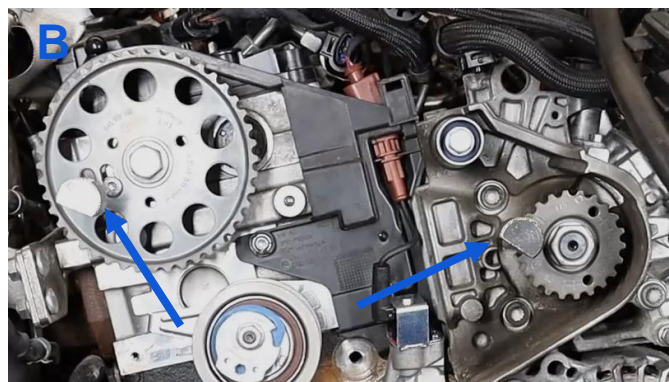
The camshaft sprocket and injector pump sprocket must be in a specific mounting position, and it must be checked that after tensioning, both sprockets are not at the stop of their twisting range. The fixing screw of the camshaft sprocket must not be in contact with the edge of the slotted hole. The top marking of the injector pump sprocket must not be aligned with the blocking pin. After installation check the installed belt tension according to step 8.

The failures observed in this application are most likely related to a desynchronized injector pump. When the synchronization is out of phase the belt tension will become irregular and it will have a higher maximum belt tension and a lower minimum belt tension, for which neither the belt nor the tensioner is designed.

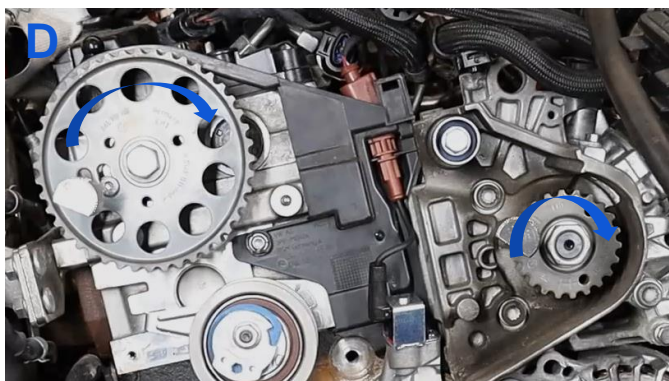
The mandatory steps for the tensioning process are explained on the following sides. You can also see the complete installation procedure on our YouTube channel, just click [here](#).

Requirements:

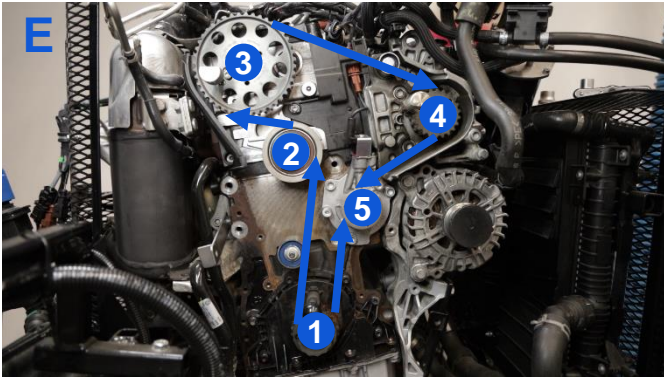
- The engine must be cold for adjustment work on the timing belt system.
- Camshaft locked with blocking tool 3359 (Pic. A), fastening screw loosely mounted, sprocket must still turn smoothly and must not tilt. Fixing screws loosely screwed in.
- Crankshaft locked with blocking tool T10490 (Pic. B).
- High-pressure pump locked with blocking tool T10492 (Pic. B).
- High-pressure pump fastening nut screwed in loosely.
- The high-pressure pump sprocket must just be able to turn smoothly and must not tilt.
- Water pump and idlers are installed and tightened with specified torque (see below step 8).



1. Tensioning pulley locked with tool T10265 and fixed with nut to right stop. The metal nose of the tensioning pulley back plate must engage in the cast recess of the cylinder head.



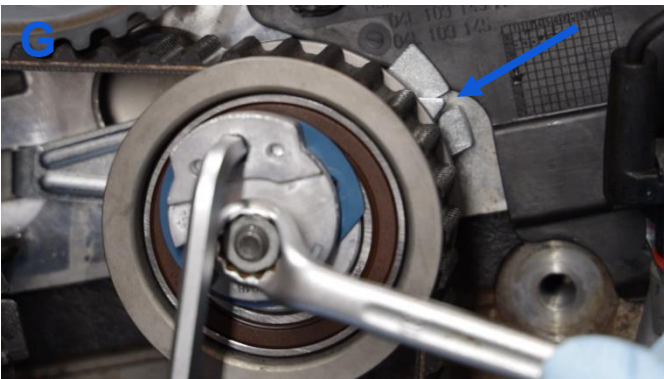
2. Turn the camshaft sprocket and the high-pressure pump sprocket clockwise in their rotation range until they come to a stop.



3. Install the timing belt in the following order:
 - 1 Crankshaft
 - 2 Tensioning pulley
 - 3 Camshaft
 - 4 High-pressure pump
 - 5 Coolant pump



4. Loosen nut for tensioner and remove tool T10265. Check again that the tensioning pulley is correctly seated (Pic. C) and make sure that the fixing screw of the crankshaft sprocket is in the lower third of the slot.



5. Turn the eccentric of the tensioner clockwise until the pointer is centered in the gap of the back plate. Hold the tensioner in this position and tighten the nut.

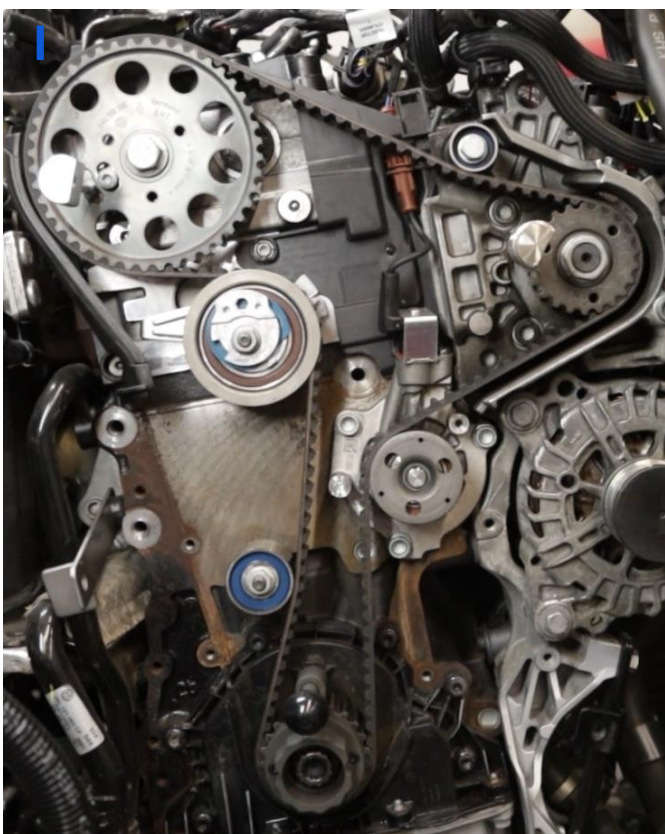


6. Place the camshaft counterholder on the camshaft sprocket as shown. Press the counterholder counter-clockwise and hold it. Now tighten fastening screw of camshaft sprocket and high-pressure pump sprocket with 20 Nm.



7. The high-pressure pump sprocket has a limited range of rotation. It is essential to check that the sprocket is not at the full stop after tensioning. Make sure that the marking on the high-pressure sprocket is not aligned with the pin. If necessary, correct the position of the high-pressure pump sprocket by one tooth clockwise and reinstall the timing belt.

Note: If the camshaft and high-pressure pump sprockets are not loosened while tensioning, the tension is not applied on the complete timing system, but only on a specific part.



8. Dismount all blocking tools and rotate the engine 2 times.
 - Install the blocking tool for crankshaft to check if the system is correctly installed:
 - Tensioner: pointer is centered in the gap of the back plate
 - Camshaft can be fixed with blocking pin 3359
 - High-pressure pump doesn't need to be fixed; small deviation is acceptable.

If the conditions are not met, restart the procedure.

If the conditions are met proceed with tightening the fastening bolt and -nut. Use always appropriate couterholder.

Tightening Torques

Camshaft central screw:	100 Nm
Camshaft fixing screw:	9 Nm
High-pressure pump nut:	95 Nm
Tensioner nut:	20 Nm + 45°
Idler nut:	20 Nm
Idler screw:	20 Nm
Water pump screws:	20 Nm + 45°






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