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# 035

25/03/2010

# Technical Bulletin

## Timing belt/kit installation on VAG 1.4/1.6 16V

<b>GATES REFERENCE :</b>	5565XS/K015565XS/K025565XS/KP15565XS/ KP25565XS-1/KP25565XS-2/T43149	
<b>MAKE :</b>	AUDI, SEAT, SKODA, VOLKSWAGEN	
<b>MODEL :</b>	Various	
<b>ENGINE :</b>	1.4 16V, 1.6 16V	
<b>ENGINE CODE :</b>	Various	

From several garage visits we learned that there are a lot of possible issues with the installation of this tensioner. So we believe it is useful to launch a technical bulletin on these engines.

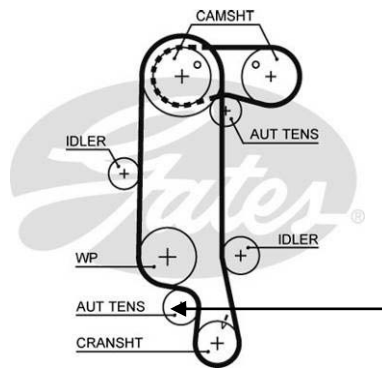


Fig. 1

Fig. 1 shows the 2 different versions of automatic tensioner (for the main drive) which can be found in our kits. They are interchangeable.

### Possible installation errors:

We found out:

- that the tensioner can be installed in a lot of incorrect positions, while still giving the impression all is OK
  - correct tensioner bolt torque is critical
  - the visual access is quite limited when the engine is installed in the vehicle.
- As a result of all this, an error can easily be made.

It is clear an incorrect position of the locating lug (Fig. 2, 3 and 4) will lead to an incorrect belt tension or to the fact the belt cannot be tensioned.



Fig. 2



Fig. 3



Fig. 4





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If the tensioner is torqued up while the locating lug is sitting on the bolt's head (Fig. 5 and 6), this will lead to a deformation of the lug (Fig. 7), an incorrect torque of the tensioner bolt and possible tensioner misalignment.



Fig. 5



Fig. 6



Fig. 7

The incorrect (too low) torque can lead to the bolt coming undone (due to vibrations) resulting in the load being transferred to the mounting bolt shank, causing it to shear (Fig. 8).

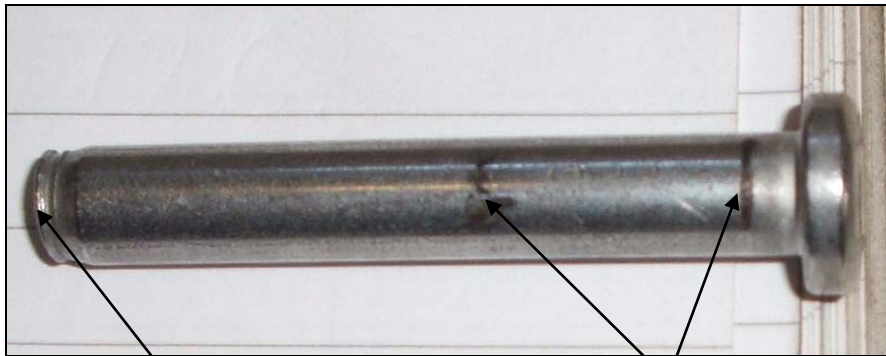


Fig. 8

Bolt sheared off

Tensioner contact marks

Even if the locating lug is over the correct bolt head, it is possible the tensioner does not sit perfectly against the engine block after the tensioner bolt is torqued, leaving a gap between the tensioner and the engine block (Fig. 9). This will also lead to the same issues later on.



Fig. 9

Gap

Not far enough over bolt head

No gap

Good position

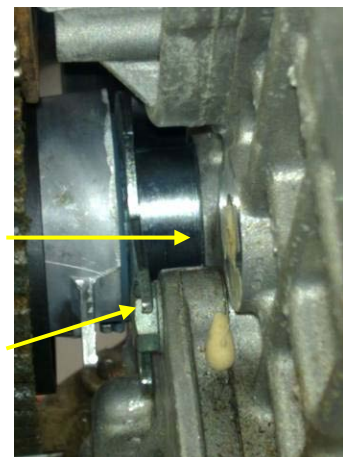


Fig. 10





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Too high torque can result in:

- deformation of the tensioner leading to overheating of the bearing
- damage of the thread in the alloy engine block, leading to the need of a thread repair (Fig. 11)
- bolt rupture



Fig. 11

Repaired thread

## Installation/Tensioning:

This engine is VERY sensitive to wrong tensioner set up. Therefore, the installation/tensioning procedure must be followed strictly and precisely. Failure to do so will most certainly result in severe drive damage.

**Important:** Engine must be cold

### 1) Main drive

Put engine at Top Dead Centre (TDC).

Slanted tooth of the crankshaft pulley (Fig. 12) has to be in line with right hand positioning rib (Fig. 13).

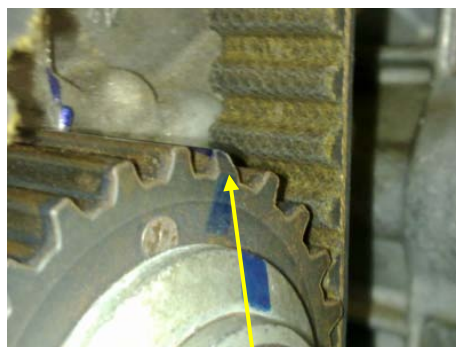


Fig. 12

Slanted tooth



Fig. 13

Positioning rib





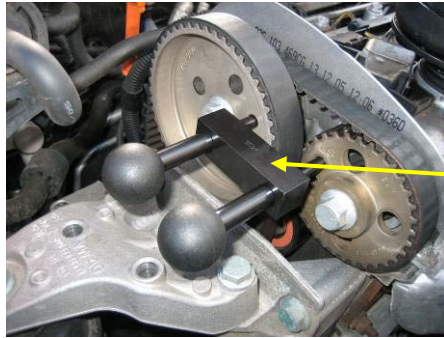
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Block the camshaft pulleys (Fig.14); use Gates tool GAT4635 (VAG tool ref. 10016).



GAT4635

Fig. 14

Make sure thread in engine block is still OK.

Install new tensioner.

Tighten tensioner bolt finger tight, assuring tensioner is in the correct position (Fig. 10).

Install a new PowerGrip® belt.

Turn tensioner pulley in clockwise direction till pointer and base plate notch are well in line (Fig. 15).



Torque tensioner bolt (20 Nm)  
Turn engine 2 revolutions to TDC and verify pointer position (adapt if needed).

Pointer in centre of the notch

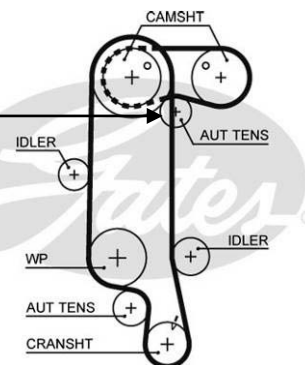
Fig. 15

## 2) Cam to cam drive

Fig. 16 shows the automatic tensioner for the cam to cam drive.



Fig. 16





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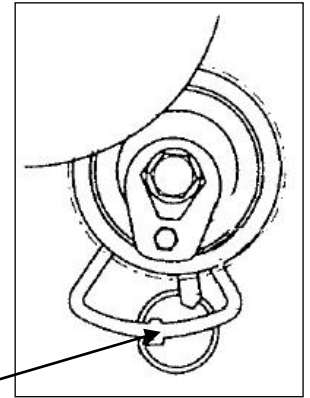
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When installing this tensioner, make sure:

- the locating lug is placed in the hole in the cylinder head at 6 o'clock (Fig. 17).
- the tensioner is turned anti-clockwise until the pointer is in line with the positioning lug
- the tensioner bolt is torqued to 20 Nm
- the engine is turned 2 revolutions to TDC and pointer position verified (adapt if needed).

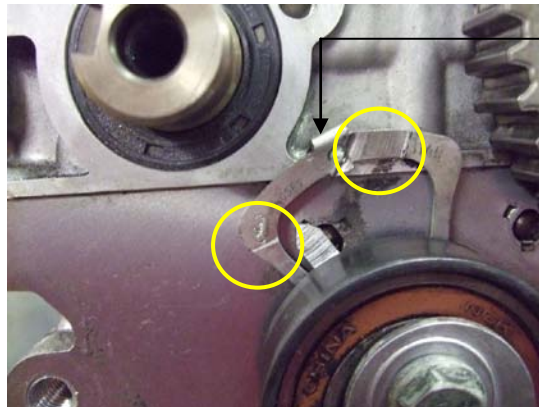


Locating lug

Fig. 17

It is clear an incorrect position of the locating lug will lead to problems like tensioner misalignment with drive failure as a result.

In one case the tensioner was mounted upside down, with the locating lug trapped behind a part of the cylinder head at 11 o'clock (Fig. 18). When bolting on the tensioner, the back plate deformed, because there was no hole for the lug to fit in.



Locating lug

Fig. 18

As a result, the left hand side cam sprocket and the timing belt were touching the back plate, and the belt edge was 'eaten' away until the belt broke. The marks on the tensioner back plate (Fig. 18) and the debris on the inside of the drive cover (Fig. 19) were the clear witnesses of this destruction process.



Fig. 19





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## Selection of the correct PowerGrip® Kit:

Make sure you install the correct PowerGrip® Kit depending on engine number:

K015565XS is used on:

Seat

Leon 1.4 AHW ->| Eng nbr AHW160 000

Toledo1.4 AHW ->| Eng nbr AHW160 000

Volkswagen

Bora 1.4 AHW ->| Eng nbr AHW160 000

Bora 1.4 AKQ ->| Eng nbr AKQ242 000

Golf 1.4 AHW ->| Eng nbr AHW160 000

Golf 1.4 AKQ ->| Eng nbr AKQ242 000

Lupo 1.4 AHW ->| Eng nbr AHW160 000

Lupo 1.4 AKQ ->| Eng nbr AKQ242 000

Polo 1.6 AJV ->| Eng nbr AJV005 000

All the other applications use K025565XS

The difference between K01 and K02 is the tensioner of the cam to cam belt drive.

The pulley width of the K01 tensioner (T43078) is 18 mm, for the K02 tensioner (T43140) this is 19 mm (Fig. 20).

They are NOT interchangeable.

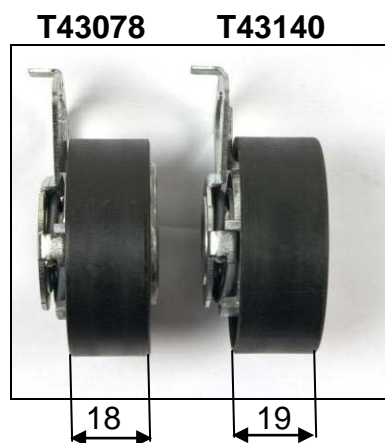


Fig. 20

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