Technical Bulletin

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Tensioning issues on Chevrolet/Daewoo 16V petrol engines

GATES REFERENCE:	**5419XS/K015419XS**	
MAKE:	Chevrolet/Daewoo	
MODEL:	Aranos, Assol, Aveo, Cielo, Espero, Kalos, Lacetti, Lanos, Nexia, Nubira, Rezzo, Tacuma	
ENGINE:	1.4 16V, 1.5 16V, 1.6 16V	
ENGINE CODE:	Various engine codes	

Through our field experience and failure analysis, we have learned that drive failure on these engines can be avoided by strictly following the correct installation procedure.

Drive failure is mainly caused by not rotating the water pump to set the belt tension. Although the drive is equipped with an 'automatic' tensioner, this still has to be set up correctly. And this requires manipulation of the eccentric water pump, located just below the tensioner.(Fig. 1)

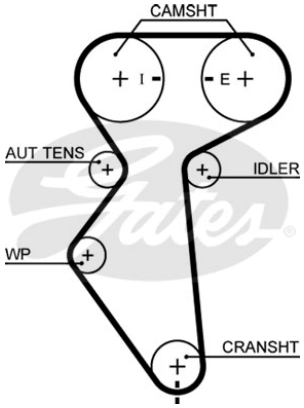

Fig. 1

It is strongly recommended to replace the tensioner and idler together with the belt, as these parts obviously also wear out.
A worn bearing (loss of grease, seizure, misalignment …) is just as bad as a worn belt, and will lead to premature drive failure, resulting in serious engine damage.

Here is what we found out:

- Some mechanics hesitate to loosen the water pump, as they are afraid of water leaks, or do not have the proper tool to rotate the water pump. However, in this case, loosening the water pump is vital in order to reach the correct installation tension.
  (a new O-ring might be needed)

- Leaving the old tensioner on without even loosening the tensioner bolt – thinking: 'the tension was OK before, so if I do not touch it, it will remain OK' - is certainly not the correct way to work.
  If one does not loosen the tensioner bolt, cutting the old belt to remove it, the pointer of the tensioner will hit the cold stop violently. This could seriously damage the pointer, resulting in a rupture (later on). Proceeding this way, in order to be able to install

the new belt, the pointer of the tensioner has to be pushed back. When trying this with a screwdriver, one risks that the screwdriver will slip off the pointer (because of the high spring tension) which will again hit the cold stop.

Fig. 2

Fig. 3

This can break off the tensioner pointer (Fig 2).
Fig. 3 shows where the pointer is situated on a good tensioner (in its rest position).

- In some cases the timing belt is installed on a hot engine. It is clear this may lead to premature drive failure, because tensioner set up procedures have been developed for cold engines.

Trying short cuts in the procedure is always dangerous, but especially with more complicated drive systems like this one.

Correct procedure:

Removal

In order to make access to the drive easier, it is recommended to remove the engine support (Fig. 4)

Fig. 4

Engine support

1. remove auxiliary belt crankshaft pulley, re-install bolt
2. put engine at TDC: rotate the crankshaft clockwise until the timing mark on the crankshaft gear is aligned with the notch at the bottom of the rear timing belt cover, and align the timing marks on the camshaft gears (Fig 1). Block camshafts with Gates multi-lock tool (GAT 4695)

3. slightly loosen the bolts of the water pump
4. rotate water pump anticlockwise, using special adjustment tool (Gates: GAT V501A or OE: J-42492 or KM-421-A), to release tension on the belt (Fig. 5)
5. remove the timing belt, tensioner and idler.

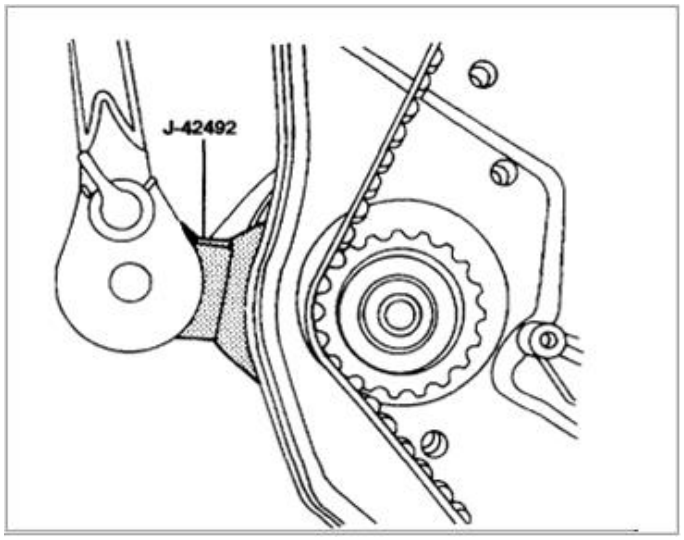

Fig. 5

Installation

1. Install a new tensioner and idler, and fit the new belt (anticlockwise, starting from crankshaft). Use kit K015419XS.
2. adjust tensioner pointer up to the notch in the tensioner back plate - close to the right hand stop - by rotating the water pump gently clockwise (Fig. 6, 7 and 8).


Fig. 6 View from front


Fig. 7 View from back

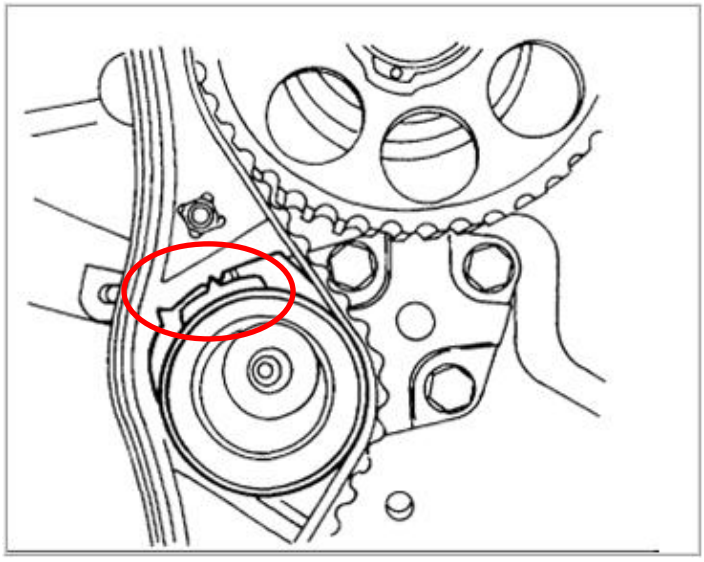

Fig. 8

3. tighten the water pump bolts
4. rotate the engine 2 full revolutions clockwise (by rotating crankshaft) until TDC.
5. slightly loosen the bolts of the water pump
6. bring tensioner pointer in line with the pointer on the tensioner back-plate by rotating the water pump anticlockwise, with special adjustment tool. (Fig. 9)

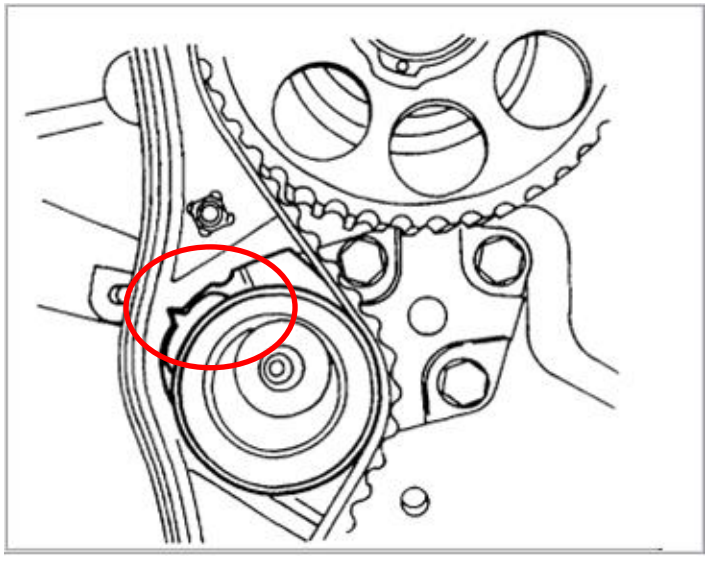

Fig. 9

7. tighten the water pump bolts
8. re-install engine support
9. re-install the removed auxiliary belt crankshaft pulley

Conclusion:

- only work on cold engines
- replace timing belt, tensioner and idler every 60.000 KM or 4 years
- put tensioner in correct position only by rotating the water pump
- follow every step in the OE installation procedure
- use the specified tools

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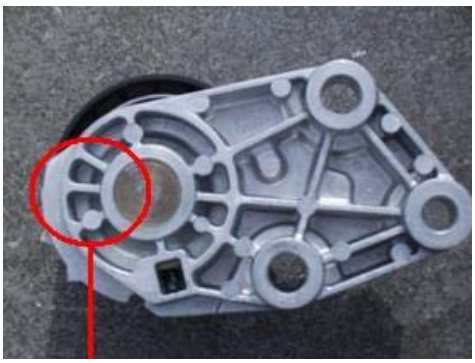
In addition, one has to watch out for counterfeit tensioners which can be widespread in certain markets (Fig.10 and 11 are OE, Fig. 12 is counterfeit)

OE
Fig. 10



OE
Fig. 11

Counterfeit
Fig. 12

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