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# 001

28/02/2005

# Technical Bulletin

## Installation recommendations for timing system on GM 1.4, 1.6, 1.8, 2.0, 2.2 16V engines

<b>GATES REFERENCE :</b>	<b>5368XS, 5369XS, 5408XS, 5461XS, 5499XS, 5542XS</b>	
<b>MAKE :</b>	OPEL / VAUXHALL	
<b>MODEL :</b>	Astra, Calibra, Combo, Corsa, Cavalier, Frontera, Kadett, Meriva, Omega, Signum, Sintra, Tigra, Vectra, Zafira	
<b>MOTOR :</b>	1.4, 1.6, 1.8, 2.0, 2.2 16V	
<b>MOTOR CODE :</b>	C14SEL, X14XE, C16SEL, C16XE, X16XE, X16XEL, Y16XE, Z16XE, C18XE, X18XE, X18XEL, Z18XE, Z18XEL, X20XE, X22SE, X22XE, Y22SE, Y22XE, Z22XE	

### IMPORTANT:

Only install belt and tensioner when engine is at **room temperature**.

**Only rotate engine CLOCKWISE !!!** 

Never re-install a used belt (tensioners are developed for new belts!!!).

The 'USED' position on the base plate is where the pointer will move towards during the life of the belt.

Camshaft- and crankshaft sprockets should not rotate unless the belt is installed and tensioned.

- Align Top Dead Centre (TDC) marks. As the same engine used in a different model can have a different belt, we give the TDC marks following belt number here, and not following engine code.  
5369XS/5499XS: crankshaft: 5 O'clock, L-cam: 3 O'clock, R-cam: 9 O'clock  
5368XS/5408XS/5461XS/5542XS: crankshaft: 6 O'clock, camshafts 12 O'clock.
- Block camshafts
- Loosen tensioner bolt
- Turn tensioner clockwise and remove belt
- Remove old tensioner
- Install new tensioner, hand tighten bolt. Tensioner lip **has to be** in oil pump housing slot. (Tensioner pointer has to sit behind water pump pulley). The Allen key hole has **to be set** in +/- 7 O'clock position (fig. 1).
- Install new belt anti-clockwise starting at crankshaft

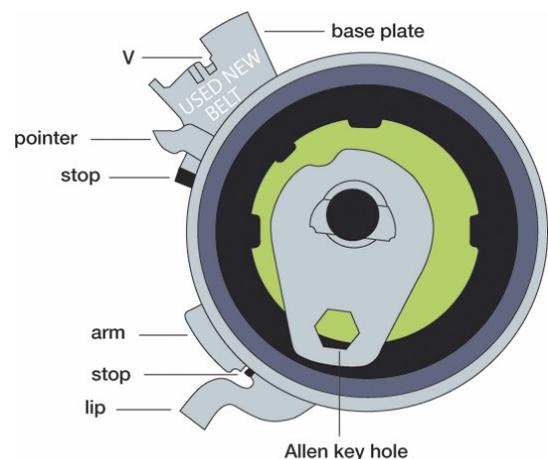


Fig. 1



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- Turn tensioner (with Allen key) anti-clockwise (while holding the bolt in place) till pointer is in line with (not passing) right hand side of base plate (fig. 2)

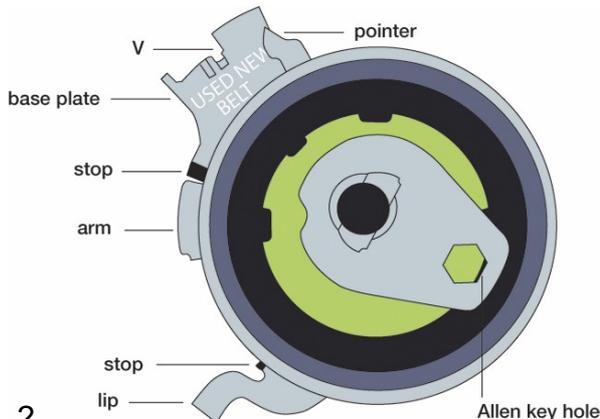


Fig. 2

- Tighten tensioner bolt (+/- 20 Nm)
- Unblock camshaft
- Turn engine (manually) 2 revolutions via crankshaft (this for proper seating of the belt teeth in the grooves; and to

distribute the tension), till TDC marks align again. If not aligned, restart at step 1.

- If pointer not in line with V ("NEW" position), bloc camshafts again
- Loosen tensioner bolt
- Adjust tensioner (while holding the tensioner bolt in place), till pointer in line with V ("NEW" position); the Allen key hole has to be in +/- 5 O'clock position now (fig. 3)
- Tighten tensioner bolt (+/- 20 Nm)
- Unblock camshafts
- Turn engine 2 revolutions (via crankshaft), till TDC marks align again
- Check tensioner pointer position. If correct (in V) install other removed parts. If not correct, do repeat steps 13 to 18, till pointer aligns with V.

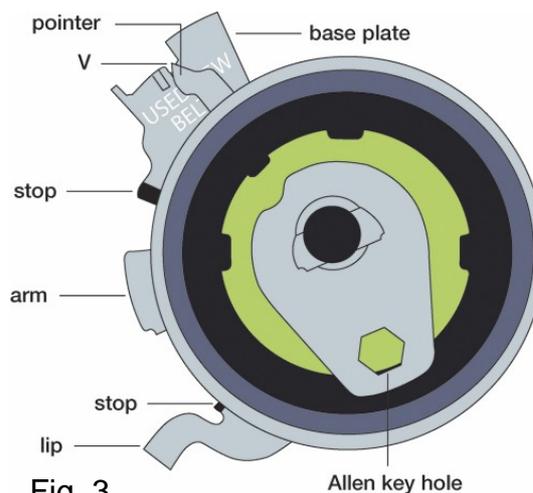


Fig. 3

## ATTENTION !!!

Rotating the tensioner in the wrong direction, having the Allen keyhole in a wrong position to start off, not turning the engine 2 revolutions before and after setting the tension, can lead to system failure. This will cause the arm of the tensioner to hit the stop, creating a hammering noise, damaging and possibly even rupturing that part. This failure mode is very common and can easily be recognised when inspecting the edge of the arm (fig. 4). The resulting wrong tension can cause the belt to rupture.



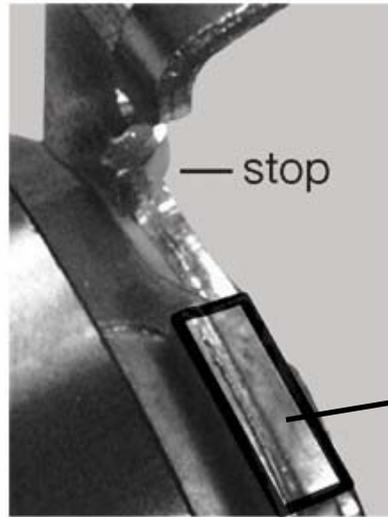
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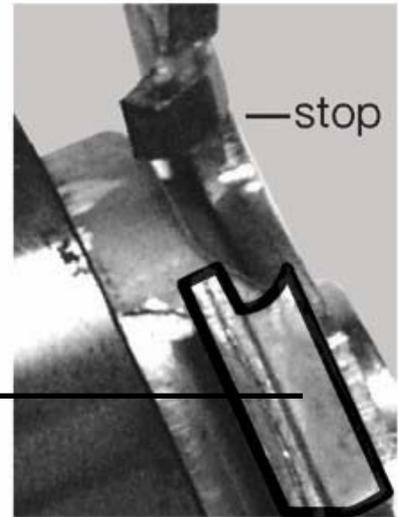
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"normal"



"damaged"

arm

Fig. 4