



Caution

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It has been written and presented in a way that enables any professional automotive technician with an appropriate level of skill and competence to carry out the work required. The information applies only to standard models and does not apply to vehicles fitted with equipment other than the standard production options.

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Timing Chains & Gears

Timing chains and gears, unlike timing belts, do not require routine replacement. However they may have to be removed or replaced in the course of other repair work or at very high mileage. It is important to follow the general precautions and the specific valve timing instructions for each engine.

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Model:

Engine code:

Year:

Special tools

- Crankshaft pulley/hub puller – No.103589003300.
- Crankshaft sprocket puller – No.102589053300.
- Flywheel/drive plate locking tool – No.602589004000.
- Injection pump locking tool – No.601589052100.
- Injection pump splined tool – No.601589000800.
- Injection pump sprocket centering tool – No.601589051400.
- Timing chain link installer – No.000589584300.
- Pulley holding tool – No.603589004000.

- Install and tighten tensioner after repairs **3**. Tightening torque: 80 Nm.
- Camshaft sprocket bolt MUST be replaced if length 'X' exceeds 53,6 mm **7**.

General precautions

- Disconnect battery earth lead.
- Remove glow plugs to ease turning engine.
- Turn engine in normal direction of rotation (unless otherwise stated).
- Observe tightening torques.
- If fitted: Mark position of crankshaft position (CKP) sensor before removal.
- Do NOT turn crankshaft via camshaft or other sprockets.
- Do NOT turn crankshaft or camshaft with timing chain removed.
- Check diesel injection pump timing after resetting valve timing – refer to Autodata Diesel Injection Manual.

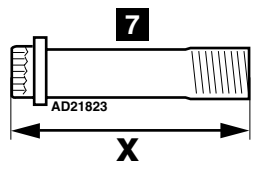
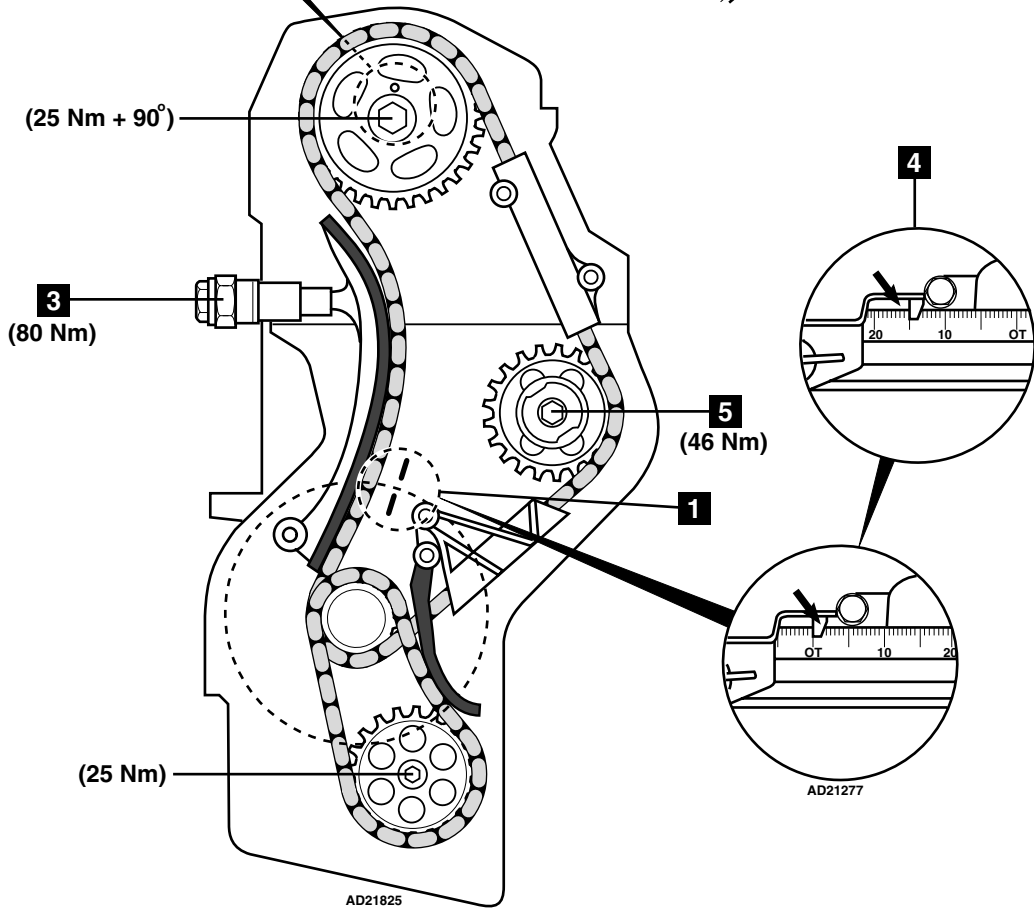
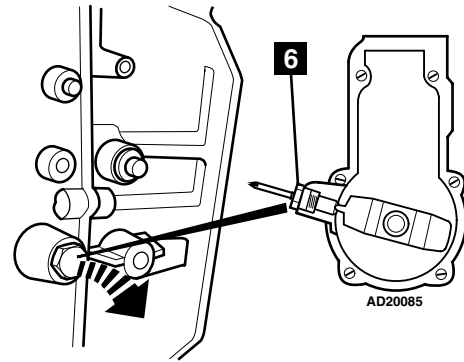
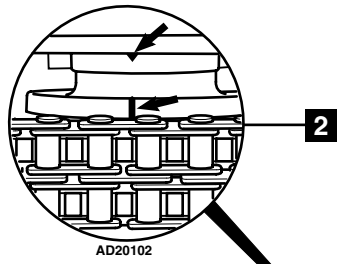
Valve timing procedures

NOTE: Timing chain can be changed without dismantling engine. Using the tools listed above, the new chain can be linked to the old, passed round the sprockets and then joined.

- Engine at TDC on No.1 cylinder **1**.
- Ensure camshaft timing marks aligned **2**.
- Remove tensioner assembly before carrying out engine repairs **3**.
- During removal/installation of injection pump: Crankshaft position set at 15° ATDC on No.1 cylinder **4**.
- Install injection pump sprocket centering tool before removing bolt **5**. Tool No.601589051400.

NOTE: Injection pump sprocket bolt has LH thread **5.**

- After removal of injection pump, install locking tool **6**. Tool No.601589052100.
- Fill chain tensioner with oil before installation:
 - Submerge tensioner vertically in SAE 10 engine oil with plunger pointing downwards.
 - Compress plunger 7-10 times.
 - After filling, ensure tensioner plunger can be compressed slowly and evenly with considerable effort.



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