

# Special tools

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- Flywheel locking tool - Ford No.21-234/251 (303-698/303-675).
- Angle gauge, bolt tightening - Ford No.21-540.
- Universal flange holding wrench - Ford No.15-030-A (205-072/205-072-01).

# General precautions

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- 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.

# Valve timing procedures

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### Removal

- Turn crankshaft clockwise until timing mark on each camshaft sprocket at 12 o'clock position [1] & [2] .
- Remove crankshaft position (CKP) sensor. Fit flywheel locking tool. Tool No.21-234/251 [3] .

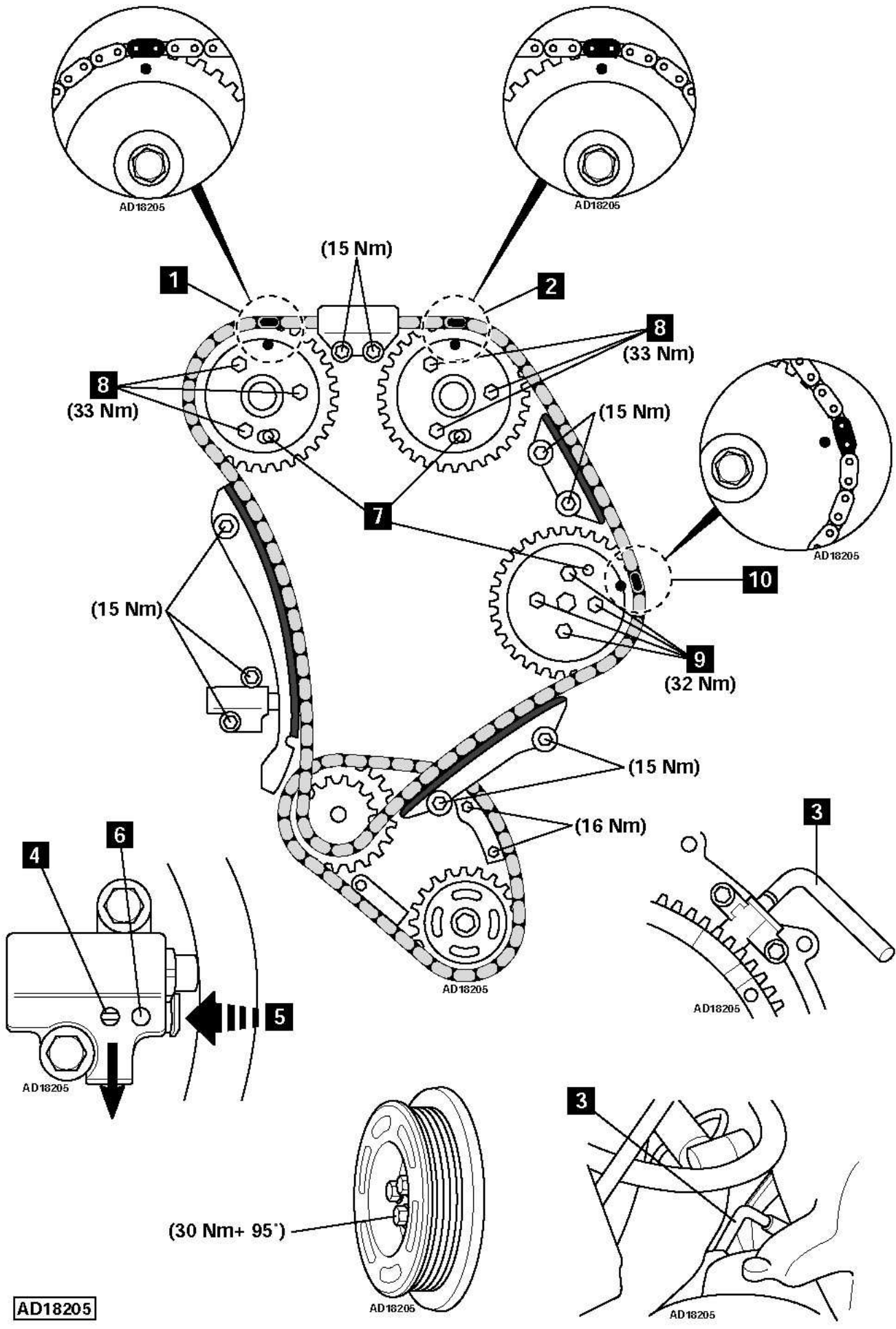
**NOTE: Engine at 50° before TDC on No.1 cylinder.**

- Lock timing chain tensioner in retracted position:
- Release pawl [4] .
- Push lock in [5] .
- Insert tensioner locking pin [6] .
- Remove tensioner.
- Remove tensioner rail, chain guides and timing chain.

### Installation

- Ensure flywheel locking tool installed.
- Insert 6 mm drill bits into camshaft sprockets and injection pump sprocket [7] .
- Slacken bolts of each camshaft sprocket and injection pump sprocket bolts [8] & [9] .
- Align copper coloured chain links with timing mark on each sprocket [1], [2] & [10] .
- Ensure timing chain is taut between sprockets on non-tensioned side.
- Remove tensioner locking pin [6] .
- Models without EGR: Turn injection pump sprocket anti-clockwise to remove slack from timing chain.
- Tighten bolts of each camshaft sprocket [8] . Tightening torque: 33 Nm.
- Tighten injection pump sprocket bolts [9] . Tightening torque: 32 Nm.

**NOTE: Crankshaft pulley bolts MUST only be used three times. Stamp bolt heads with centre punch to indicate usage.**



**AD18205**