# MCK0240

# VALVE TIMING PROCEDURE

In some engines it is necessary to use two spacers in order to align the camshaft gears. The spacers are positioned on the camshaft toothed-gears with the slots facing the wheels.

# Manufacturer: Opel / Vauxhall

Engine code: X10XE / X12XE / Z10XE / Z10XEP / Z12XE / Z12XEP / Z14XEP

#### **Special equipment**

- Camshaft blocking tool n. KM-953.
- Camshaft position sensor disc adjustment tool n. KM-954.
- Engine shaft blocking pin n. KM-952.
- Chain tensioner blocking pin n. KM-955-1.

## **General precautions**

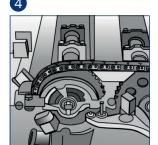
- Always disconnect the ground cable from the battery.
- Remove the spark plugs in order to allow the engine to turn more freely.
- Always turn the engine in the normal direction of rotation (unless specifically instructed otherwise).
- **DO NOT** use the special equipment listed above to block the engine when the pinion or pulley bolts are loosened.
- Observe tightening torques.
- If fitted: Note the position of the engine shaft position sensor before dismantling.
- **DO NOT** turn the engine shaft by turning the camshaft or other pinions.
- **DO NOT** turn the engine shaft or camshaft with the timing chain removed.

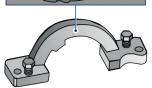
## Valve timing procedure

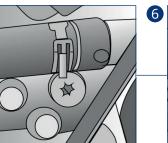
- Turn the engine shaft to the first TDC mark on cylinder n. 1 (1).
- Remove the engine block cap.
- Slowly turn the engine shaft clockwise until it is possible to insert the blocking pin into the engine shaft 2.
   Tool n. KM-952.
- Insert the blocking tool into the rear of the camshafts 3.
  Tool n. KM-953.
- Fit the camshaft position sensor disc adjustment tool 4.
  Tool n. KM-954.
- Remove the cap from the front timing cover 5.
- Press the chain tensioner and block it with the tool 6.
  Tool n. KM-955-1.
- If necessary, loosen the bolt of each camshaft pinion in order to adjust the valve timing position **7**.
- Fit new bolts to the camshaft pinions 7
- Tighten the bolt on each camshaft pinion as indicated below 7:
  - First stroke 10 Nm.
  - Second stroke 50 Nm + 60°.
- Tighten the engine shaft pulley bolts to 8 Nm (8).
- Fit a new central bolt for the engine shaft pulley.
- Tighten the central bolt for the engine shaft pulley 9.
  Tightening torque: 150 Nm + 45°.
- Refit the engine block cap. Tightening torque: 50 Nm.
- Refit the cap for the front timing cover 5.
  Tightening torque: 50 Nm.

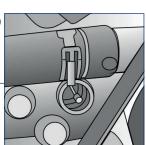
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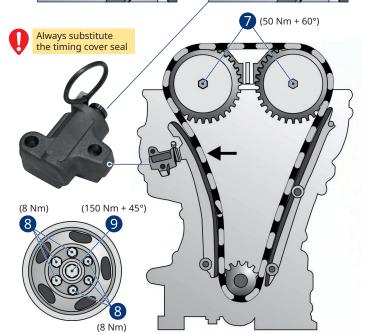
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