

VKMA 03248



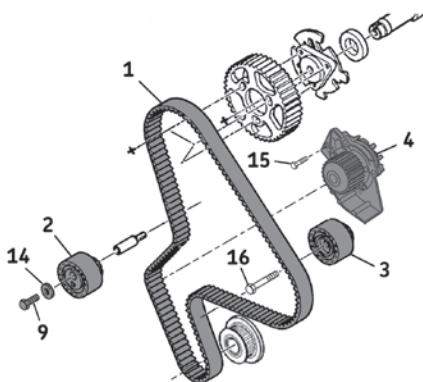
VKMC 03248



A

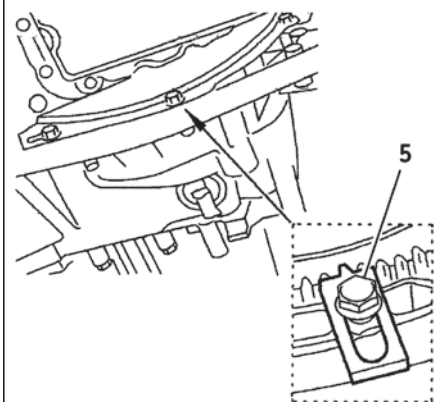


- (5): Flywheel locking tool (Ref. 0188F).
- (6): Flywheel timing pin (Ref. 0188X/ Ref. 0288D).
- (7) Camshaft timing pin (Ref. 0188M).
- (10): Belt fitting tool (Ref. 0188K).
- (12): Belt tension adjustment tool (Ref. 0188J2).
– SEEM tension gauge (CTG 105.5M) (Ref. 0192).

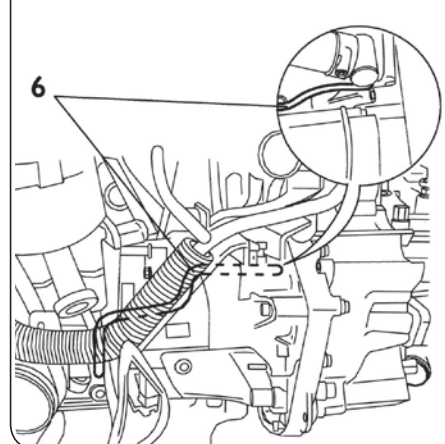


- (8): 20 Nm
- (9): 23 Nm
- (15): 15 Nm
- (16): 43 Nm

B



C



Removal

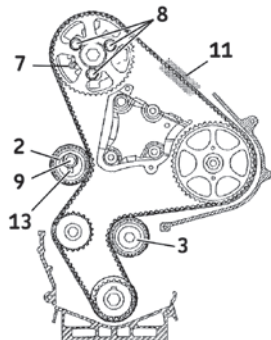
- 1) Disconnect the battery according to the vehicle manufacturing guidelines.
- 2) Prepare the vehicle for the timing replacement according to the vehicle manufacturing guidelines.
- 3) Lock the flywheel using tool (5) (Fig. B).
- 4) Remove the crankshaft pulley
- 5) Remove the tool (5) (Fig. B).
- 6) Turn the crankshaft in the engine rotation direction until the timing pin (6) can be inserted in the flywheel (Fig. C).
- 7) Insert pin (7) in the camshaft hub (Fig. D).
- 8) Loosen the tensioner roller (2) fastening bolt (9) (Fig. D).
- 9) Remove timing belt (1), tensioner roller (2) and idler roller (3) (Fig. D).
- 10) **Removing the water pump (VKMC 03248):** firstly bleed the cooling circuit, check it is clean, and clean if required; secondly fully loosen the water pump fastening bolt (15) and remove the pump (4) (Fig. A).

Refitting

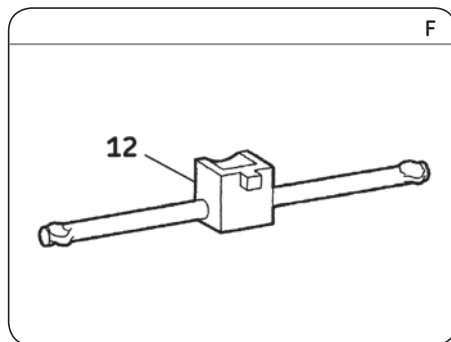
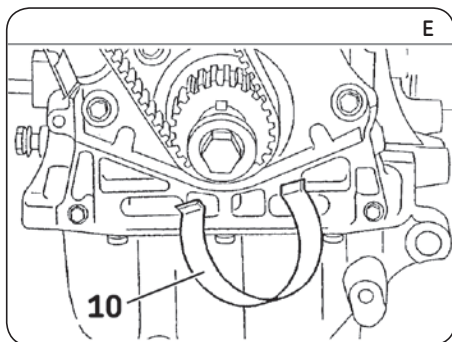
Caution! First clean the bearing surfaces of the rollers.

- 11) **Refitting the water pump:** Firstly fit the new water pump (4), apply the torque **15 Nm** to the waterpump bolts (15); then check that the water pump pulley runs properly, and has no hard or locking spots.
- 12) Fit the new tensioner roller (2) with its new bolt (9) and its new washer (14).
- 13) Fit the new idler roller (3) and tighten its fastening bolt (16) to **43 Nm**.
- 14) Loosen the camshaft sprocket fastening bolts (8) (Fig. D).
- 15) Retighten by hand the camshaft sprocket fastening bolts (8) (Fig. D).
- 16) Move the camshaft sprocket to the end of the oblong holes by turning it in the engine rotation direction.

D



Install Confidence



- 17) Place the new timing belt (1) on the crankshaft sprocket and immobilize with tool (10) (Fig. E).
- 18) Continue fitting the timing belt (1) in the following order: idler roller (3), high pressure pump sprocket, camshaft sprocket, water pump sprocket and tensioner roller (2).

Note: To help place the belt on the camshaft and high pressure pump sprockets, turn the camshaft sprocket very slightly in an **anti-clockwise** direction. The angular displacement of the camshaft sprockets relative to the belt must not exceed one tooth.

- 19) Remove the tool (10) (Fig. E).
- 20) Place the sensor (11) of the tension gauge on the belt (1) between the camshaft and high pressure pump sprockets (Fig. D).
- 21) Tighten the timing belt: insert the tool (12) (Fig. F) in the hole (13) and turn the tensioner roller (2) **anti-clockwise** until a reading of **98 SEEM** units is displayed on the tension gauge (Fig. D).
- 22) Tighten the tensioner roller fastening bolt (9) to **23 Nm**.
- 23) Check that the camshaft sprocket is not bearing against the end of the oblong holes. Tighten the camshaft sprocket fastening bolts (8) to **20 Nm** (Fig. D).

- 24) Remove the sensor (11) (Fig. D).
- 25) Remove the timing pins (6), and (7) (Fig. C and Fig. D).
- 26) Turn the crankshaft through **8 revolutions** in the engine rotation direction until pins (6) and (7) can be inserted (Fig. C and Fig. D).
- 27) Loosen the camshaft sprocket fastening bolts (8) as well as those of the tensioner roller (2) (Fig. D).
- 28) Place the sensor (11) on the belt (1) (Fig. D).
- 29) Insert the tool (12) (Fig. F) in the hole (13) and turn the tensioner roller (2) until a reading of **51 ± 2 SEEM** units is displayed on the tension gauge (Fig. D).
- 30) Tighten the fastening bolt (9) of the tensioner roller (2) to **23 Nm**. Tighten the sprocket fastening bolts (8) to **20 Nm** (Fig. D).
- 31) Remove then refit the sensor (11) and check that the tension reading is between **48** and **55 SEEM** units (Fig. D).
- 32) If the tension is not correct, loosen the camshaft sprocket fastening bolts (8) and the tensioner roller fastening bolt (9), refit the pin (6) and (7) and re-start the tension adjustment operation from step 21).
- 33) Remove the sensor (11) (Fig. D).
- 34) Remove the timing pins (6), and (7) (Fig. C and Fig. D).

- 35) Turn the engine through **two revolutions** in its normal direction of rotation until pins (6) and (7) can be inserted (Fig. C and Fig. D).
- 36) Remove the timing pins (6) and (7).
- 37) Refit the elements removed in reverse order to removal.
- 38) Fill the cooling circuit with the permanent fluid recommended.
- 39) Check the circuit's leak-tightness when the engine reaches its running temperature and secure the level of coolant when the engine is at ambient temperature (20 °C).

Notice: Always follow the vehicle manufacturer instructions when working on the engine. The SKF KITS are designed for the automotive repair professional and must be fitted using tooling used by these professionals. These instructions are to be used as a guideline only. This document is the exclusive property of SKF. Any representation, partial or full reproduction, is forbidden without prior written consent from SKF.