NT 02006
VKMA/C 02172
VKMA 02178
VKMA 02185

Fiat / Lancia

VKMA 02172

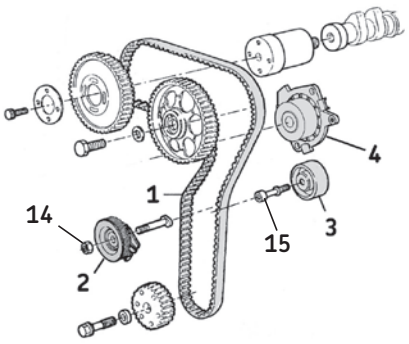
VKMC 02172

VKMA 02178

VKMA 02185

A

(6): Camshaft timing tools (ref. 1860892000 or ref.18708288000).
- Comparator.
- Spark plug wrench (ref. 1850184000).
- Wrench for locking the exhaust camshaft sprocket (ref. 1860831000 or ref. 1860831002 or ref. 1860848000).
- Wrench for locking the intake camshaft sprocket (ref. 1860856000).
- Flywheel locking tool (ref. 1860846000 or ref. 1860898000 or ref. 1870827000).
- Comparator bracket (ref. 1860895000 or ref. 1895879000).



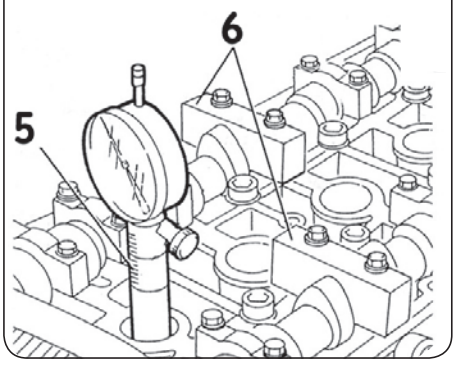
(14): 30 Nm
(15): 25 Nm

Removal

Note: Changing the timing belt and the tensioner and idler roller can require removing the engine/gearbox assembly, as there is no room between the timing casing and the vehicle body.
If required, set the engine/gearbox assembly on a stand.

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) According to the vehicle (Fiat and Lancia) and engine being repaired (2.0l or 2.4l), remove the following items if required: timing belt protection casing, inner protection casing of the flywheel, high voltage coil bracket, cylinder head cover, auxiliary belt
4) Remove the spark plugs using the plug wrench.
5) Lock the flywheel using the appropriate locking tool (see specific tooling).
6) Remove the crankshaft pulley.
7) Remove the flywheel locking tool.
8) Position the comparator, using the bracket (**5**) (**Fig. B**), on the well of cylinder Nr 1.
9) Turn the crankshaft up to TDC indicated by the comparator.
10) Remove the upper half-bearing of cylinder Nr 3 on the exhaust camshaft side, the upper half bearing of cylinder Nr 2 on the intake camshaft side, then place the tools (**6**) (**Fig. B**) while tightening them at **10 Nm**.

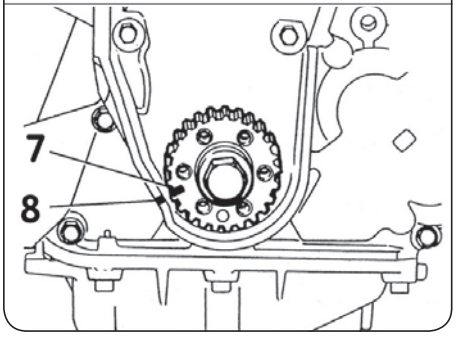
B



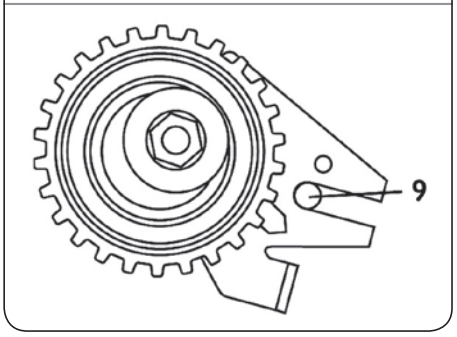
Note: the tools (**6**) must adapt perfectly to the camshaft profile.

11) Check that the mark (**7**) on the crankshaft sprocket is aligned with mark (**8**) on the engine casing (**Fig. C**).
12) Loosen the tensioner roller fastening bolt (**2**), loosen and remove the timing belt (**1**) then the tensioner (**2**) and idler rollers (**3**) (**Fig. A**).
13) Loosen the camshaft sprockets using an appropriate locking tool (see special tools).
14) **Removing the water pump** (**VKMC 02172**): firstly bleed the cooling circuit, check it is clean, and clean if required; secondly fully loosen the water pump (**4**) fastening bolts and remove the pump (**Fig. A**).

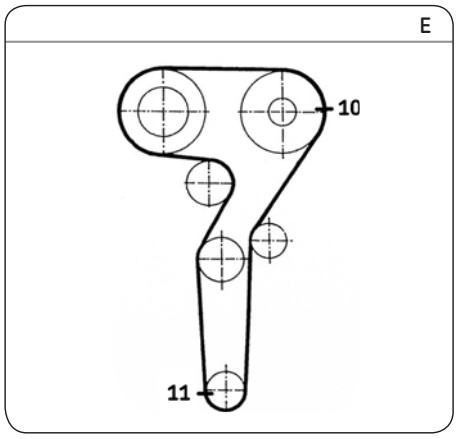
C

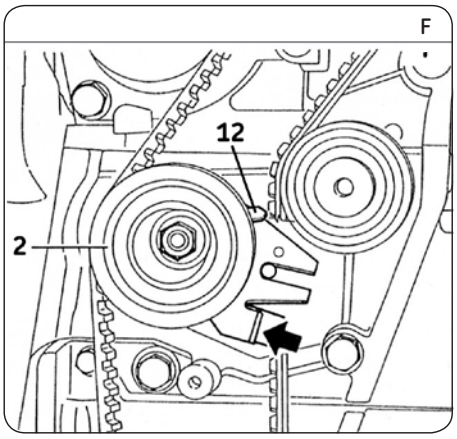


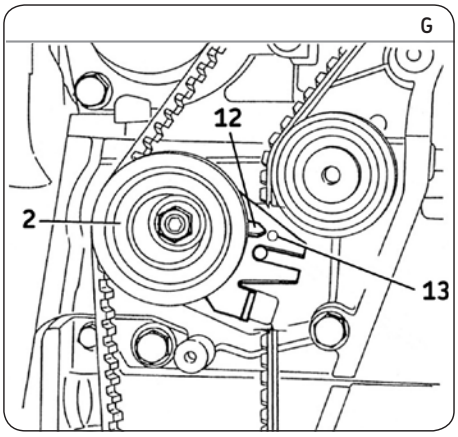
D



Install Confidence







Refitting
Caution: Clean the bearing surfaces of the rollers.

15) **Refitting the water pump**: Firstly fit the new water pump (**4**), apply the torque to manufacturer recommendations; then check that the water pump pulley runs properly, and has no hard or locking spots.
16) Fit the new tensioner roller (**2**) by tightening slowly its fitting bolt (**14**) (adjust the pin (**9**) located on the engine down to the bottom of the slot on the roller rear plate) (**Fig. D**). Fit the idler roller (**3**) (**Fig. A**) and tighten its fastening bolt (**15**) at **25 Nm**.
17) Fit the new timing belt (**1**) by applying the following sequence: crankshaft sprocket, idler roller (**3**), camshaft sprockets, water pump sprocket, then the tensioner roller (**2**).

Note: fit the timing belt (**1**) according to the engine's rotation direction (arrow on belt). This same belt also has two marks which must match those on the camshaft sprockets on the exhaust side (**10**) and crankshaft (**11**) (**Fig. E**).

18) Turn the tensioner roller (**2**) using a flat screwdriver (see black arrow **Fig. F**) to set the moving pointer (**12**) to maximum tension position (**Fig. F**) and tighten the fastening bolt (**14**) at **30 Nm**.
19) Using the appropriate locking wrench (see specifical tools), tighten the exhaust camshaft sprocket bolt at **120 Nm** and the bolts on the intake camshaft sprocket at **9 Nm**.
20) Remove the camshaft locking tools (**6**) (**Fig. B**) and the engine locking tool.
21) Refit the camshaft upper half-bearings and tighten them at **15 Nm**.
22) Turn the crankshaft by two turns in the engine rotation direction up to TDC.
23) Loosen slightly the tensioner roller fastening bolt (**14**) while holding it in position using a flat screwdriver. Release the tensioner roller until the moving pointer (**12**) is aligned with the indicator mark (**13**) (**Fig. G**).
24) Tighten the tensioner roller fastening bolt (**14**) at **30 Nm** and turn regularly the crankshaft by two turns in the rotation direction up to TDC.

25) Check the tensioner roller adjustment (the moving pointer (**12**) must be aligned with the indicator marker (**13**) (**Fig. G**)) and check the timing marks **Fig. C**).
26) If the marks are not aligned, remove the new timing belt and adjust tension again, from step **17**).
27) To refit the parts removed and the engine/gearbox assembly, apply the reverse sequence of removal.
28) Fill the cooling circuit with the permanent fluid recommended.
29) 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).

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