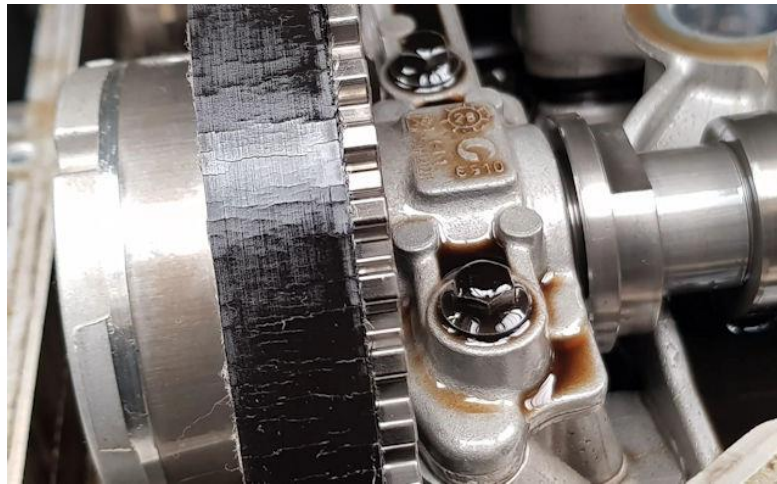




## KD459.70 /06-2022

The 1.2 PureTech naturally aspirated engine is still causing lots of trouble for its owners. The main problem involves premature wear of the timing belt, which gradually disintegrates. The resulting particles can clog up the lubrication system and plug the variable valve timing solenoids or the oil pump's (filter) screen. This then leads to lubrication issues (loss of oil pressure) or camshaft and valve fouling. The source of the problem relates to the rapid degradation of engine oil, primarily in vehicles operated relatively infrequently (less than 15,000 km per year) and where the vast majority of that usage involves city driving. Under these usage conditions, the 1.2 PureTech is susceptible to oil dilution, whereby fine droplets of unburnt fuel slide down the cylinder walls and mix with the oil in the pan below. The resulting mixture turns out to be abrasive for the belt – and this explains the wear. In the absence of a technical solution that prevents this condition, the only way to protect the belt on these infrequently used cars is to change their engine oil annually. Which explains why the manufacturer recommends verifying the condition of the belt via the oil fill port during every routine maintenance. Basically, when topping up the oil you pour it into a hole situated over the timing belt. Through that same hole, you can see part of the belt and this lets you determine its condition.

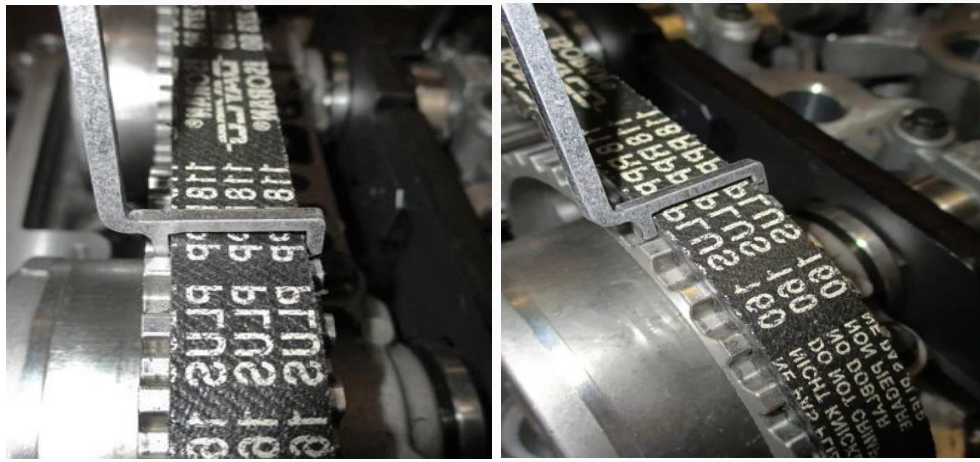


The belt should be inspected (belt width check) using a timing belt checking gauge at three different points (crankshaft rotation).

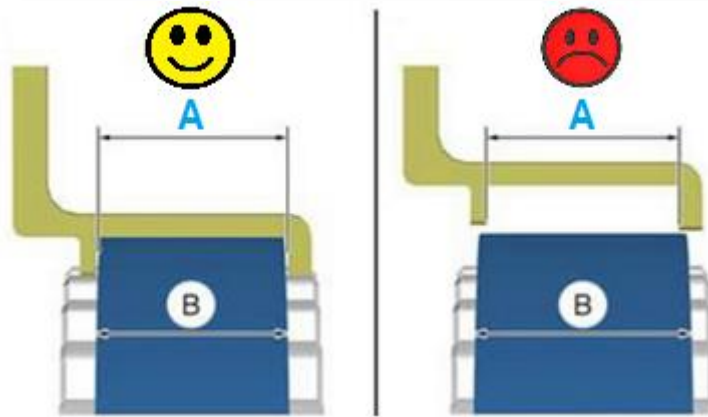


Timing belt checking gauge  
**OE (G-0109-6)**

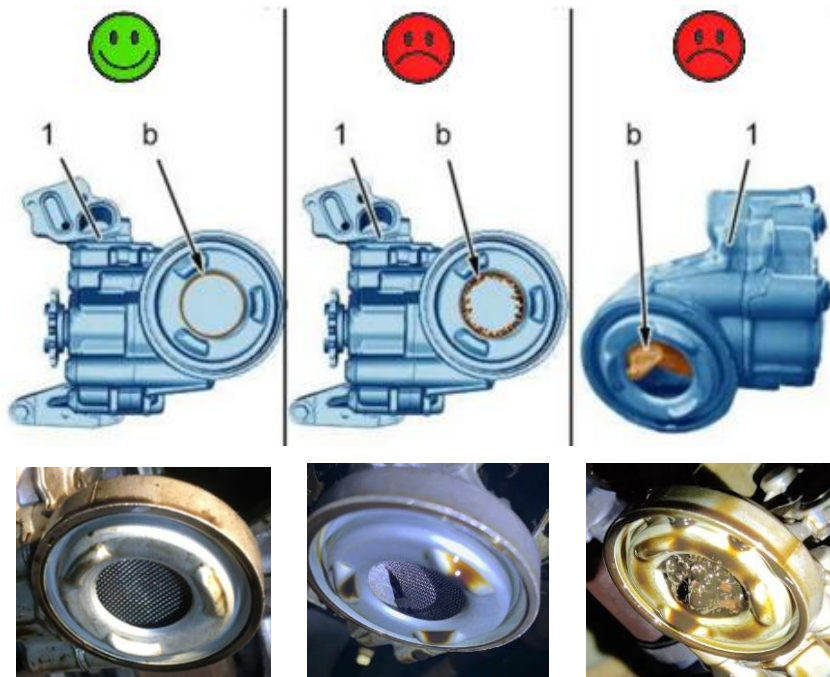
**NOTE:** The replacement interval for the timing belt is now 100,000 km or 6 years.



Belt width must be checked.



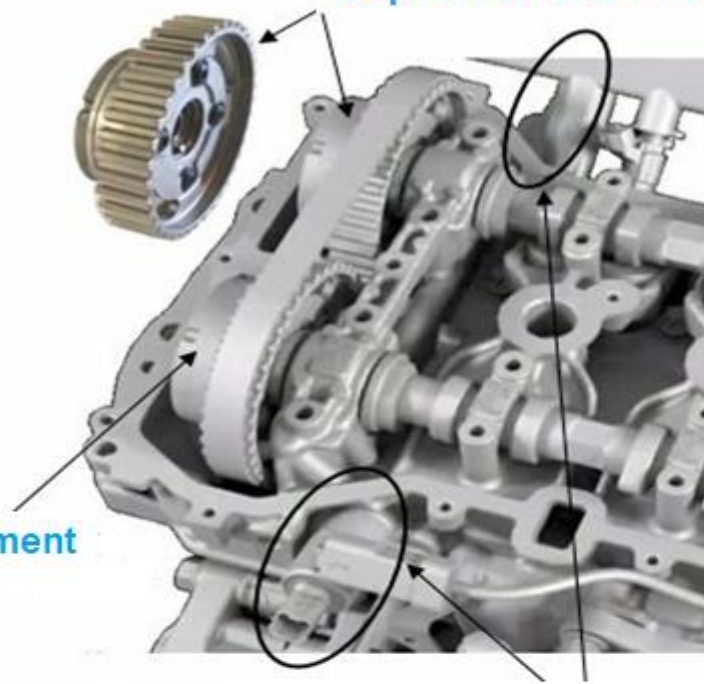
If the belt width does not meet the specification, the lower oil pan must be removed to inspect the oil pump screen.



- If the oil pump screen is slightly plugged, it should be cleaned, but the oil pump solenoid valve must be replaced; the dephaser solenoid valves can either be cleaned or replaced.
- If the screen is completely plugged, the oil pump must also be replaced.

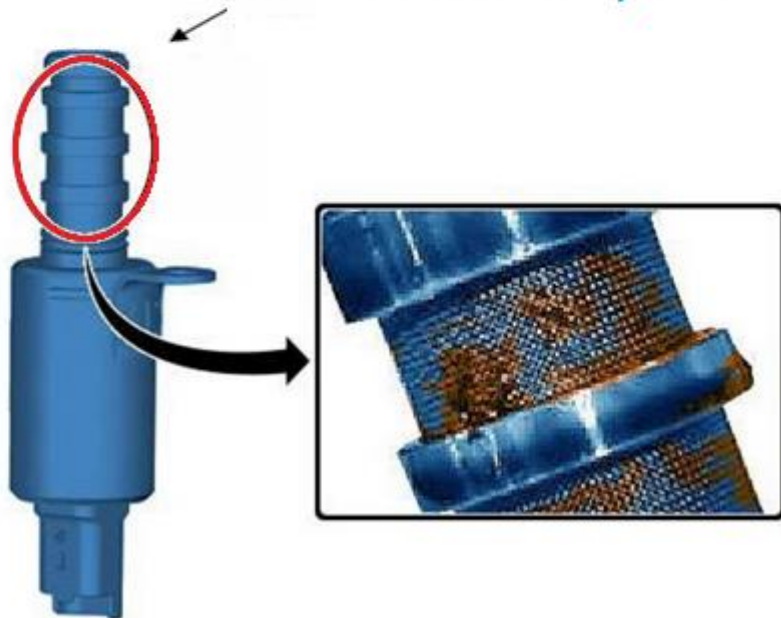


Déphaseur d'Admission



Déphaseur d'Echappement

Électrovannes des déphaseurs



## Vehicles affected

Peugeot	201	EB2 M (HMY)	1,2 L VTi 72 hp
	108	EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
	208 I	EB0 / EB0 F (ZMZ)	1.0L VTi 68 hp / 1.0L PureTech 68
		EB2 FB (HMP)	PureTech 68
		EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
		EB2 FA (HMR)	PureTech 83 S&S
	208 II	EB2 FAD (EB2 FAD)	PureTech 75 S&S
	301	EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
	2008	EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
	308 II	EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
Citroën	C1 II	EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
	C-Élysée II	EB2 M (HMY)	1,2 L VTi 72 hp
		EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
	C3 II	EB0 / EB0 F (ZMZ)	1.0L VTi 68 hp / 1.0L PureTech 68
		EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
	C3 III	EB2 FB (HMP)	PureTech 68
		EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
		EB2 FA (HMR)	PureTech 83 S&S
	C4 Cactus	EB2 D / EB2 FD (HMU)	VTi 75 / PureTech 75
		EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
C3 Aircross	EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82	
DS3	EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82	
Opel	Crossland X	EB2 / EB2 F (HMZ)	VTi 82 / PureTech 82
	Corsa VI	EB2 FAD (EB2 FAD)	PureTech 75 S&S



# KD459.70



## Recommendations

Turn the engine only by rotating the crankshaft pulley in the direction of operation.  
Do not rotate the crankshaft or the camshafts while the timing belt has been removed.  
Make timing belt adjustments only while the engine is cold.  
It is recommended not to reuse accessory belts after removal: always replace them instead.

## Systematic replacement of parts

Name	Quantity
Seal, crankshaft	1
Seal, upper engine	1
Seals, intake manifold	3
Seal, crankcase, timing belt cover	1
Belt, water pump	1
Bolt, crankshaft pulley	1
Bolts, dephaser pulleys	2



## Required tools

SNR préconise les outillages Clas OM 4041, OM 4141 et OM 4058



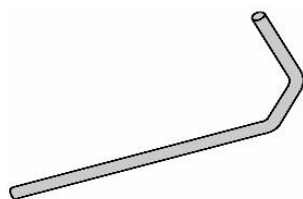
Outil de blocage du volant  
moteur  
OE (0197-N)



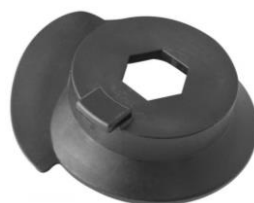
Outil de blocage des arbres à  
cames  
OE (0109-2A)



Gabarit de courroie de  
distribution  
OE (G-0109-6)



Goupille de blocage du  
galet tendeur  
OE (0188-Q1)



Outil de montage  
courroie d'accessoires  
OE (0109-1B)

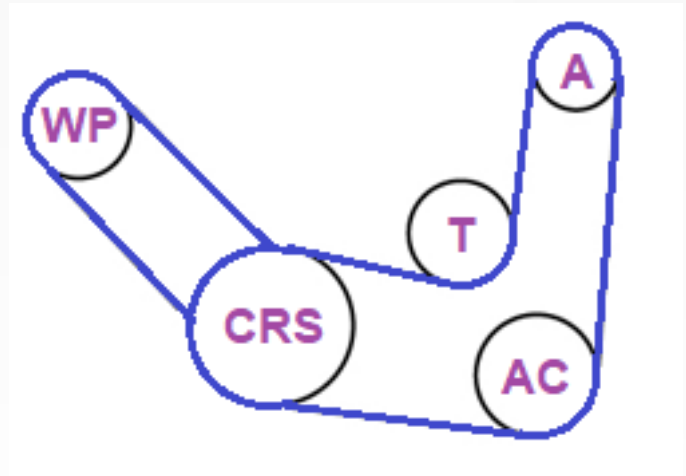
## Tightening torques

Name	Figures	Recommendations	Tightening torque
Valve cover bolt (1)	(see Figure 20-21)	Tighten in recommended order. Use a new seal.	8 Nm
Timing belt cover bolt (1)	(see Figure 19)	Use a new seal.	8 Nm
Intake manifold bolts (4)	(see Figure 22-23)	Tighten in recommended order. Use a new seal.	8 Nm
Crankshaft pulley bolt (3)	(see Figure 19)		30 Nm
Tensioner roller bolt <b>GT359.41</b> (1)	(see Figure 17)		20 Nm
Idler roller bolt <b>GE359.32</b> (3)	(see Figure 17)		20 Nm
Crankshaft gear bolt (6)	(see Figure 17)	Use a new bolt	Step 01 50 Nm Step 02 180°
Camshaft dephaser bolts (2)	(see Figure 16)	Use new bolts	Step 01 20 Nm Step 02 120°



## Accessory belt routing

Abb r.	Name
A	Alternator
AC	Air conditioner compressor
CRS	Crankshaft
T	Tensioner roller
WP	Water pump



### Removal

Place the vehicle on a lifting platform.

Remove the engine cover.

Raise the vehicle.

Remove the right front wheel.

Remove the right front wheel arch liner.

Disconnect the battery.

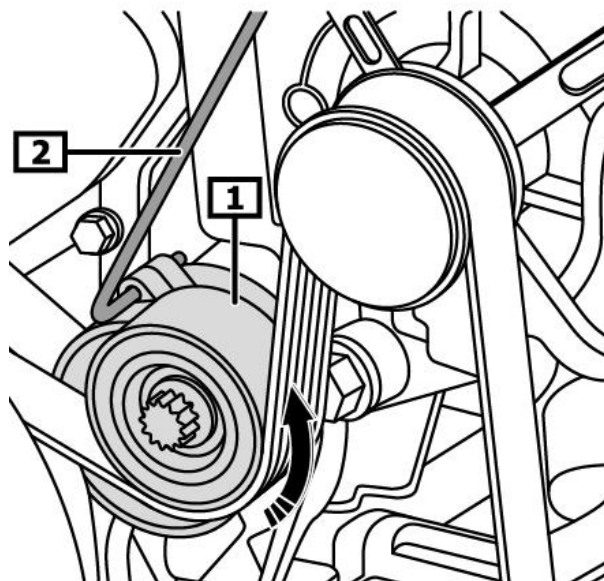
Compress the tensioning device by rotating it anticlockwise with a suitable tool. (1)

Insert the blocking tool to fix the tensioner roller in place. (2)

### Special tools required

Tensioner roller blocking tool (2) **OE (0188-Q1)**

Figure 1



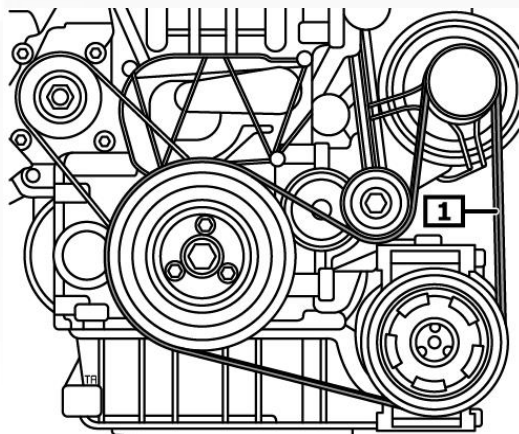
1 Accessory belt tensioning system

2 Tensioner roller blocking tool



Remove the accessory belt from the alternator and air conditioner compressor. (1)

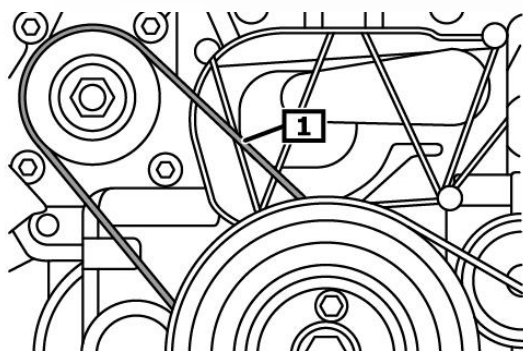
Figure 2



1 Accessory belt – alternator / air conditioner compressor

Cut the accessory belt from the water pump and remove it. (1)

Figure 3



1 Accessory belt – water pump

Remove the air filter housing.

Remove the battery.

Remove the battery support bracket.

Drain the coolant.

Remove the ignition coils.

Release the electrical connector's interlock in the direction indicated by the arrow. (1)

Press the interlock in the direction indicated by the arrow. (2)

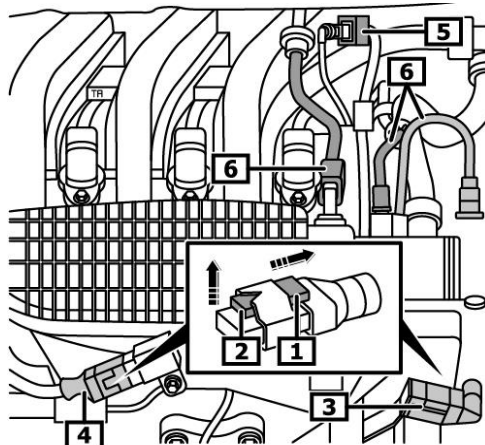
Connector of the butterfly regulation motor. (3)

Disconnect the connector from the intake air temperature sensor. (4)

Disconnect the electrical connector. (5)

Remove the engine lines. (6)

Figure 4



1 Electrical connector interlock

2 Electrical connector interlock

3 Engine throttle connector

4 Intake air temperature sensor connector

5 Electrical connector

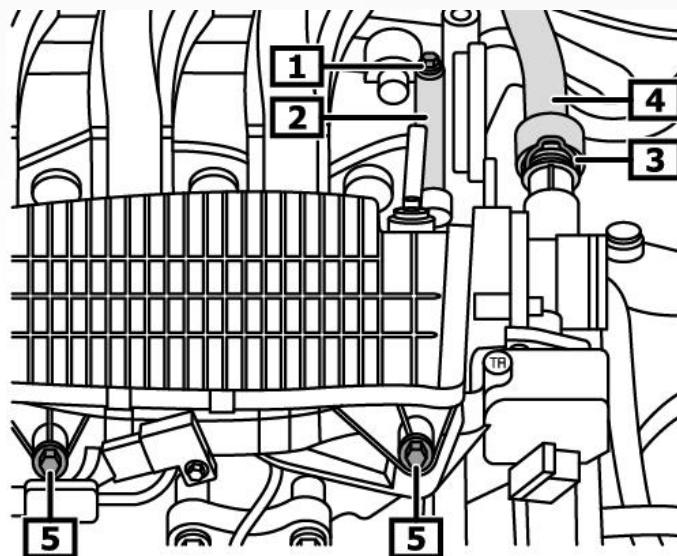
6 Lines





- Unscrew the crankcase vent tube bolt. (1)
- Remove the crankcase vent tube. (2)
- Remove the safety bracket. (3)
- Remove the coolant hose. (4)
- Unscrew the intake manifold bolts. (5)

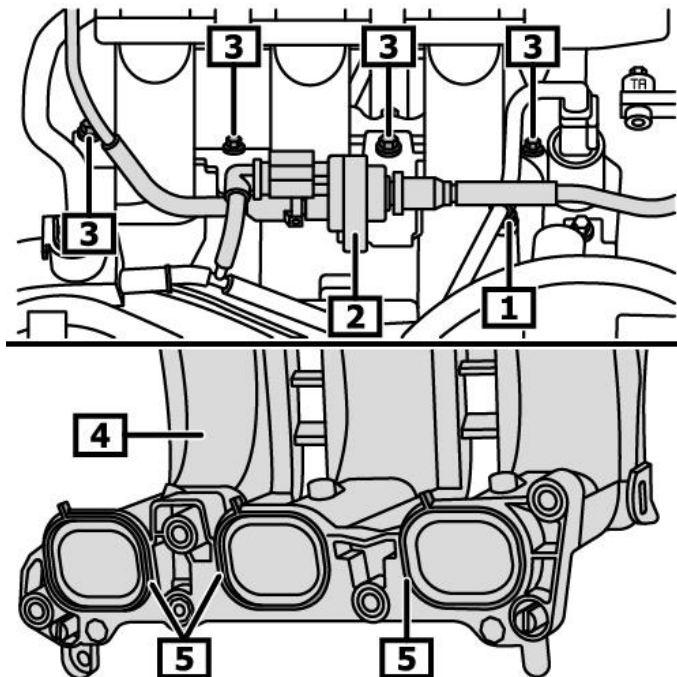
**Figure 5**



- 1 Crankcase vent tube bolt
- 2 Crankcase vent tube
- 3 Safety bracket
- 4 Coolant hose
- 5 Intake manifold bolts

- Loosen the retainer clip. (1)
- Disconnect the solenoid from the support bracket. (2)
- Unscrew the intake manifold bolts. (3)
- Remove the intake manifold. (4)

**Figure 6**

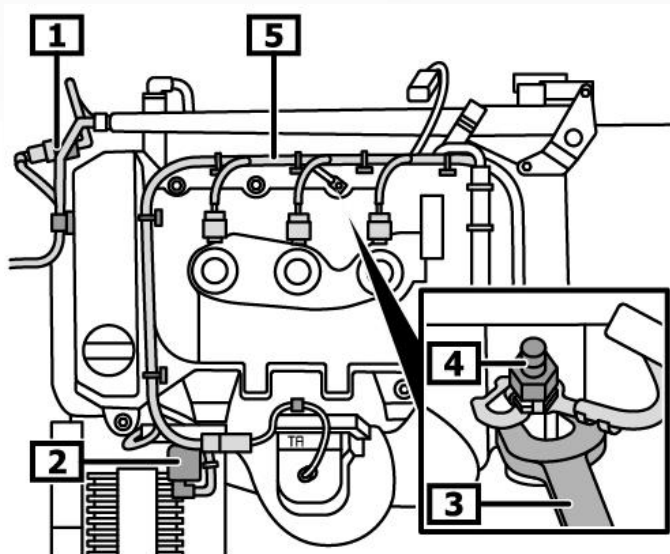


- 1 Retainer clip
- 2 Canister solenoid
- 3 Intake manifold bolts
- 4 Intake manifold
- 5 Intake manifold seals



- Remove the lines from the support brackets. (1)
- Disconnect the electrical connectors. (2)
- Hold in place with an open-end spanner. (3)
- Unscrew the earth cable screw. (4)
- Disconnect and remove the wire harness. (5)

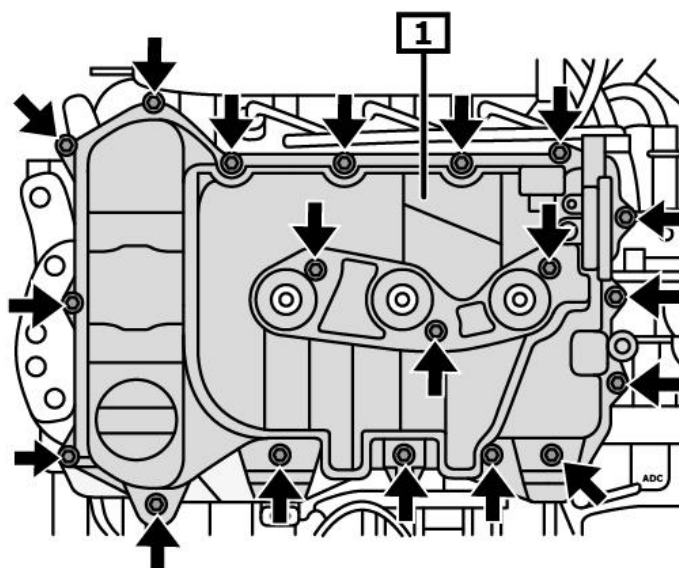
**Figure 7**



- 1 Crankcase vent tube bolt
- 2 Crankcase vent tube
- 3 Safety bracket
- 4 Coolant hose
- 5 Intake manifold bolts

- Unscrew the valve cover bolts. (arrows)
- Remove the valve cover. (1)

**Figure 8**



- 1 Valve cover



## Check the camshaft adjustment system

Turn the engine through two rotations of the crankshaft in the direction of operation.

### Intake camshaft

Place a suitable flat spanner on the positioning cams. (1)

Rotate the camshaft back and forth slightly to verify that the intake camshaft adjustment system is securely fastened to the camshaft.

If this is not the case:

Rotate the camshaft anticlockwise until it reaches the internal stop of the intake camshaft adjustment system. (1)(2)(3)

Maximum travel 30°

### Exhaust camshaft

Place a suitable flat spanner on the positioning cams. (1)

Rotate the camshaft back and forth slightly to verify that the intake camshaft adjustment system is securely fastened to the camshaft.

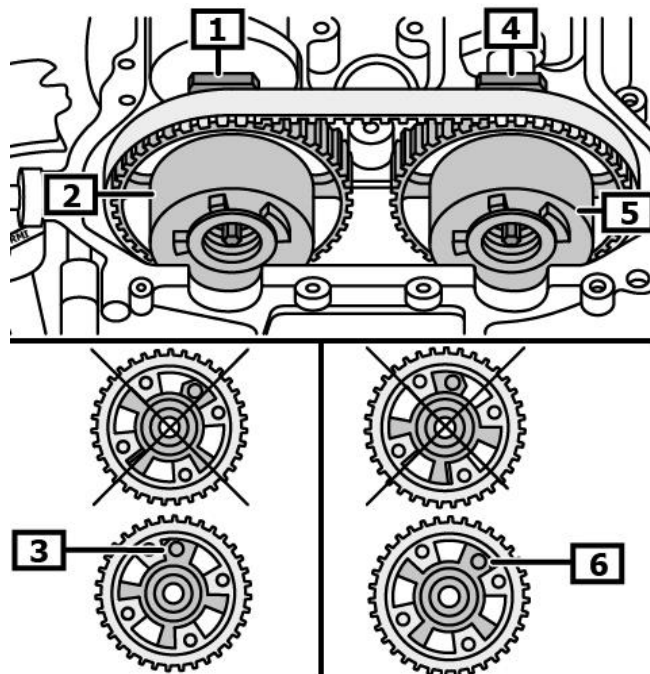
If this is not the case:

Rotate the camshaft clockwise until it reaches the internal stop of the intake camshaft adjustment system. (4)(5)(6)

Maximum travel 30°

If the mechanism cannot be locked in place, replace the intake camshaft adjustment system.

Figure 9



1 Positioning cam

2 Intake camshaft actuator

3 Stop

4 Positioning cam

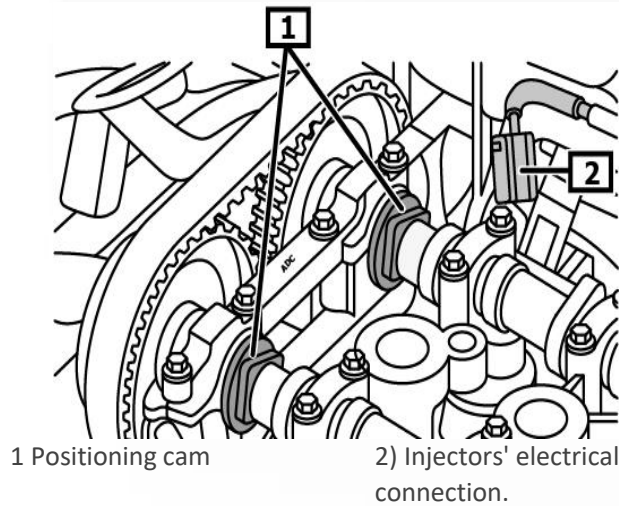
5 Exhaust camshaft actuator

6 Stop



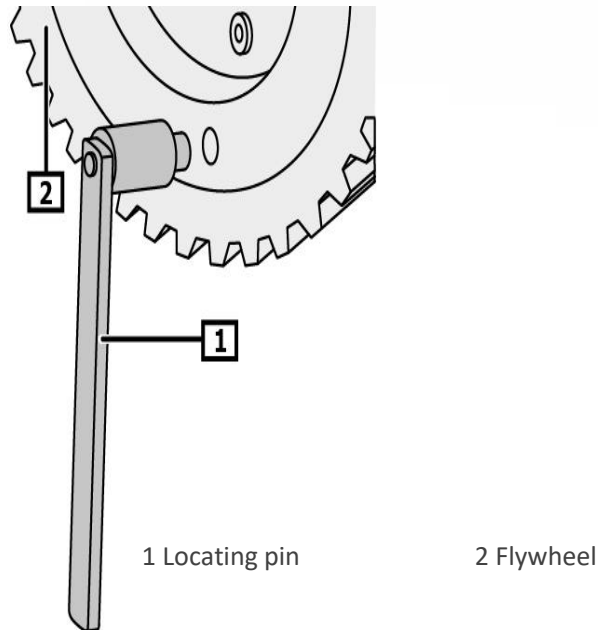
The flat side of the positioning cam must be oriented at about 30° from vertical. (1)  
 Remove the electrical connection from the injectors. (2)

**Figure 10**



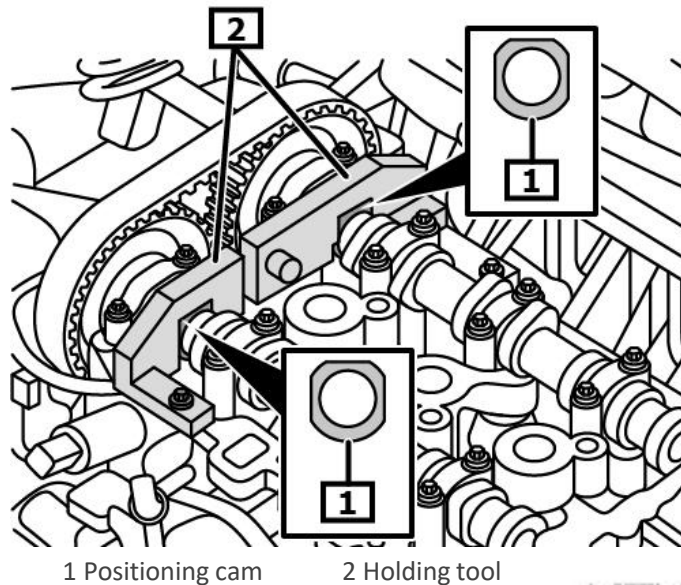
Turn the crankshaft in the direction of rotation until the locating pin can be inserted into the borehole of the flywheel through the engine block. (1)(2) **OE (0109-2B)**

**Figure 11**



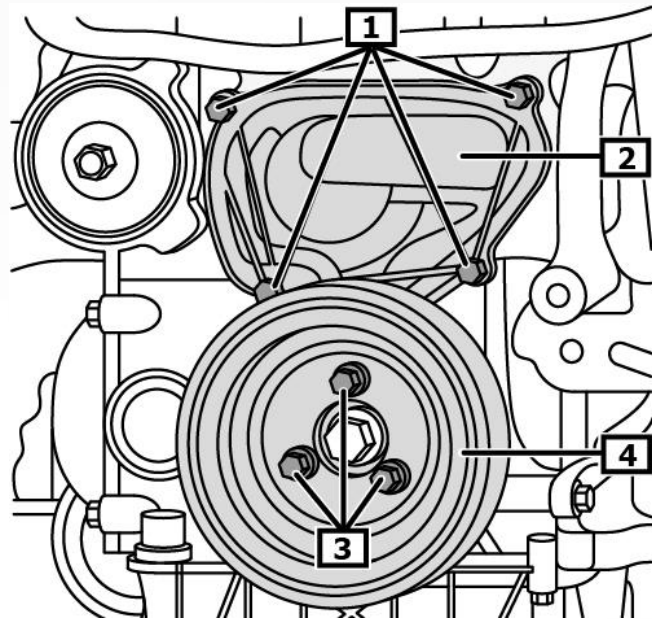
Orient the positioning cams downward.  
 Insert a holding tool. (1) **OE (0109-2A)**  
 The holding tool must be secured to the cylinder head.

**Figure 12**



- Unscrew the crankshaft pulley bolts. (3)
- Remove the crankshaft pulley. (4)
- Unscrew the timing belt cover bolts. (1)
- Remove the timing belt cover. (2)

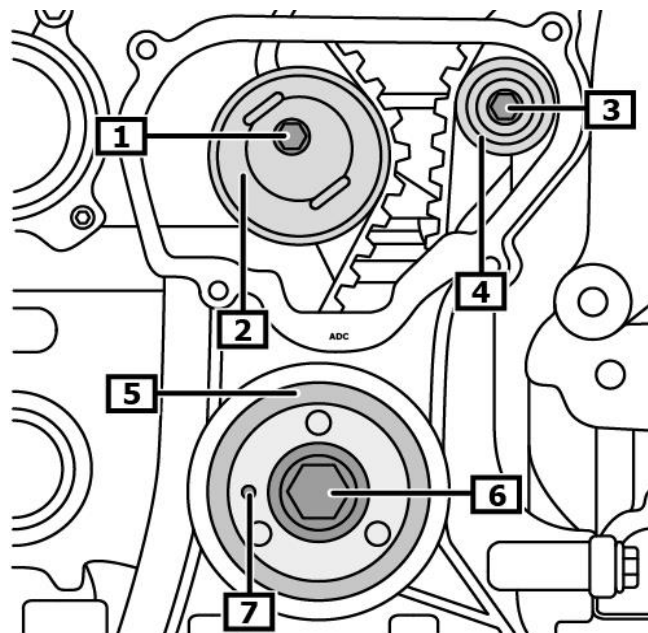
**Figure 13**



- |                           |                     |
|---------------------------|---------------------|
| 1 Timing belt cover bolts | 2 Timing belt cover |
| 3 Crankshaft pulley bolts | 4 Crankshaft pulley |

- Unscrew the tensioner roller bolt. (1)
- Remove the tensioner roller. (2)
- Remove the idler roller bolt. (3)
- Remove the idler roller. (4)
- Remove the seal. (5)
- Unscrew the crankshaft gear bolt. (6)

**Figure 14**

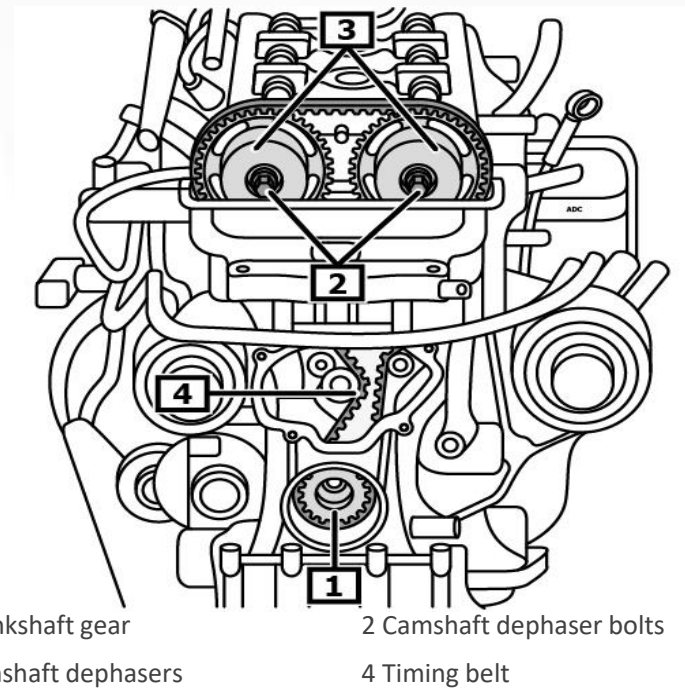


- |                                     |                        |
|-------------------------------------|------------------------|
| 1 Tensioner roller bolt             | 2 Tensioner roller     |
| 3 Idler roller bolt                 | 4 Idler roller         |
| 5 Seal                              | 6 Crankshaft gear bolt |
| 7 Reference mark on crankshaft gear |                        |



- Remove the crankshaft gear. (1)
- Unscrew the camshaft dephaser bolts. (2)
- Remove the camshaft depasers. (3)
- Remove the timing belt. (4)

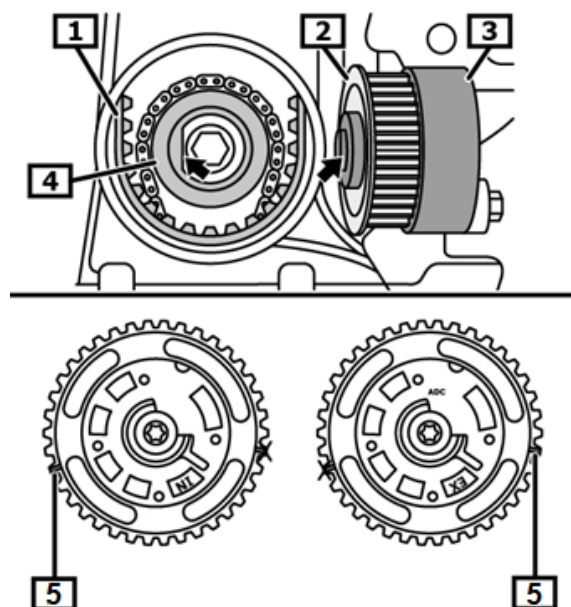
Figure 15



**Re-installation**

- Install the timing belt **CD41228**. (1)
- Install the pulley hub with the crankshaft gear. (2)(3)
- Take note of the flat on the crankshaft and the recess of the hub (3)(4) (arrows)**
- The reference mark (7) of the crankshaft pulley must be horizontal. (see Figure 9)
- Verify the position of the markings on camshafts. (1)
- The camshaft reference marks must point outward. (5)
- Tighten the camshaft dephaser bolts.

Figure 16



- 1 Timing belt
- 2 Crankshaft gear
- 3 Drive pulley hub
- 4 Crankshaft
- 5 Camshaft reference marks



Position belt **CD41228** on the camshaft gears.

Use a new bolt. (6)

Tighten the crankshaft gear bolt to the specified torque. (6)

Install a new seal. (5)

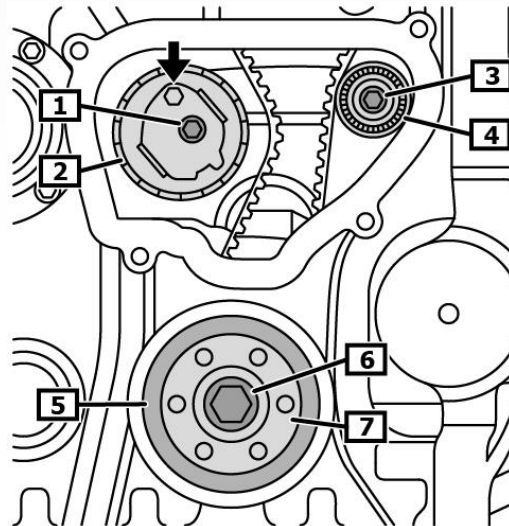
Install the idler roller **GE359.32** (4)

Tighten the idler roller bolt. (3)

Install the idler roller **GT359.41** (2)

Screw in the tensioner roller bolt. (1)

**Figure 17**



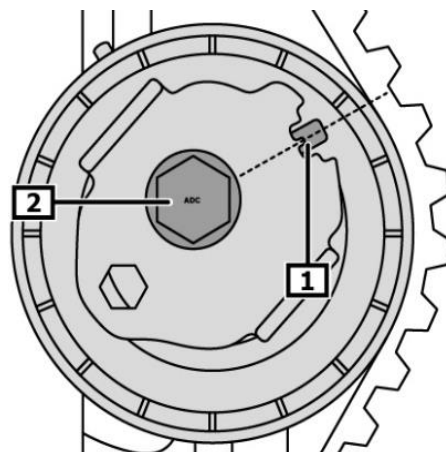
- |                         |                                    |
|-------------------------|------------------------------------|
| 1 Tensioner roller bolt | 2 Tensioner roller <b>GT359.41</b> |
| 3 Idler roller bolt     | 4 Idler roller <b>GE359.32</b>     |
| 5 Seal                  | 6 Crankshaft gear bolt             |
| 7 Crankshaft gear hub   |                                    |

Tension the timing belt.

Turn the eccentric anticlockwise with an Allen wrench until the mark lines up with the reference mark. (1)

Tighten the tensioner roller bolt to the specified torque. (2)

**Figure 18**



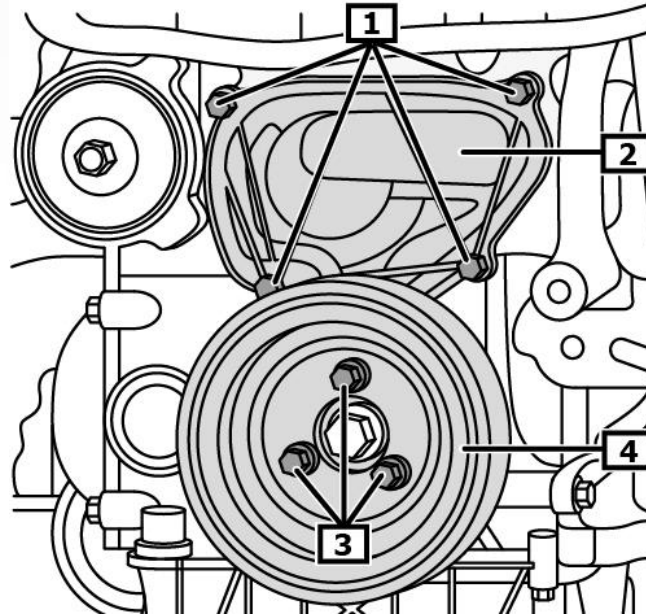
- |                  |                         |
|------------------|-------------------------|
| 1 Reference mark | 2 Tensioner roller bolt |
|------------------|-------------------------|



- Install the timing belt cover (2) with a new seal.
- Tighten the lower timing belt cover bolts. (1)
- Install the crankshaft pulley. (4)
- Use new bolts. (3)
- Tighten the crankshaft pulley bolts. (3)

**NOTE:** Follow all tightening torque specifications.

**Figure 19**



- 1 Timing belt cover bolts
- 3 Crankshaft pulley bolts

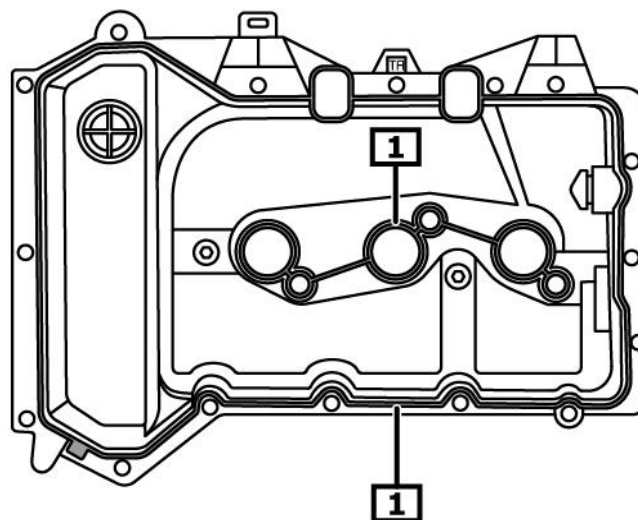
- 2 Timing belt cover
- 4 Crankshaft pulley

- Remove all locating pins.
- Turn the engine through two rotations of the crankshaft in the direction of operation.
- Insert the locating pins.

If the locating pin cannot be inserted, the cam timing must be corrected.

- Replace the valve cover seal. (1)
- Verify that all the threaded sockets are in the valve cover bolt holes.
- Re-install the valve cover.

**Figure 20**



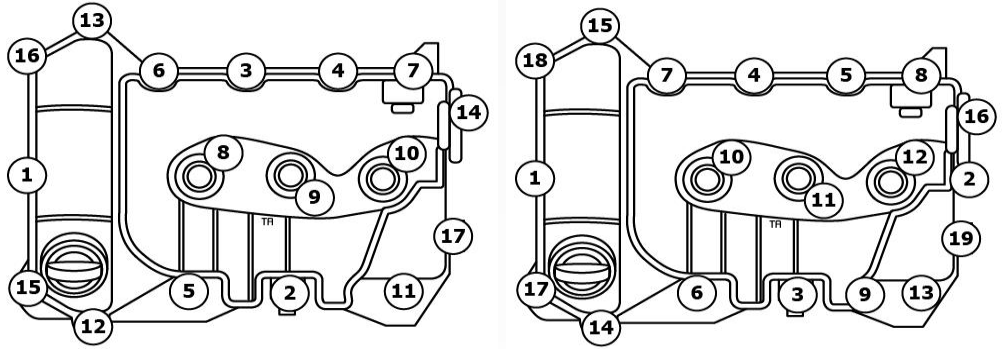


Re-install the valve cover bolts.

Version 1: Tighten the valve cover bolts in the order shown, from 1 to 17. (1) - (17)

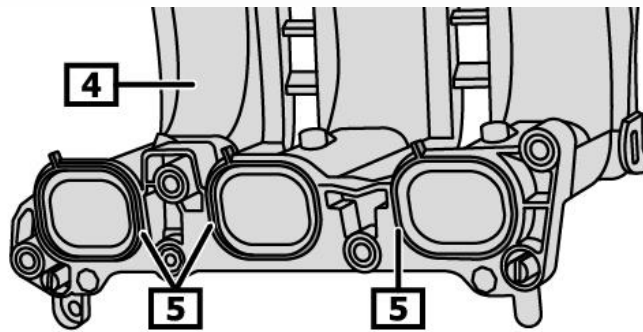
Version 2: Tighten the valve cover bolts in the order shown, from 1 to 19. (1) - (19)

**Figure 21**



Replace the intake manifold gaskets.

**Figure 22**



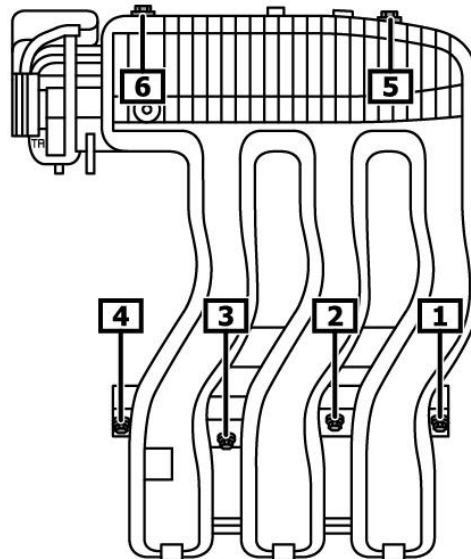
4. Intake manifold

5 Intake manifold gaskets

Install the intake manifold.

Tighten the intake manifold bolts in the order shown, from 1 to 6. (1) - (6)

**Figure 23**



1- 6 Intake manifold bolts

Re-install the air filter housing.

Fill the radiator with coolant.

Connect the battery.

Purge the air from the cooling system.



Re-install the accessory belt for the water pump (coolant pump).

Install the accessory belt installation tool. (1)

Position the accessory belt on the hook of the installation tool. (1) - (3)

Turn the crankshaft about 1 to 2 turns in the direction of operation.

Force the accessory belt onto the water pump pulley. (2)(4)

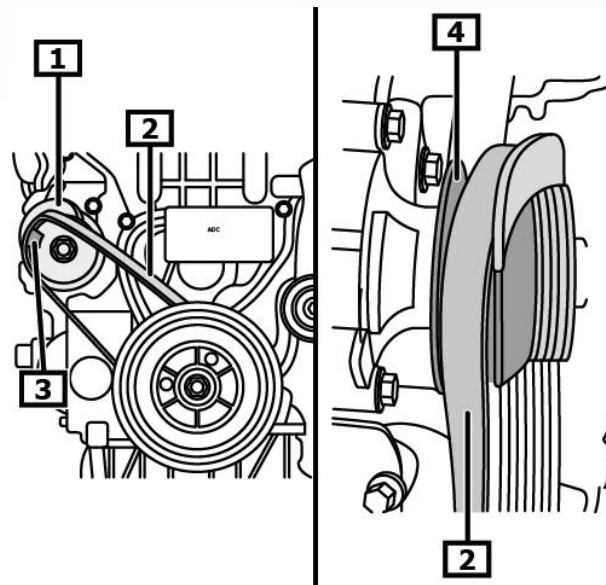
Turn the engine in the direction of operation until the accessory belt is fully seated in the grooves of the pulley. (2)

Pay attention to the correct positioning of the accessory belt. (2)

If the water pump belt is not correctly positioned, the installation procedure must be repeated with a new belt. (2) Special tools required

Installation tool (1) **OE (0109-1B)**

**Figure 24**

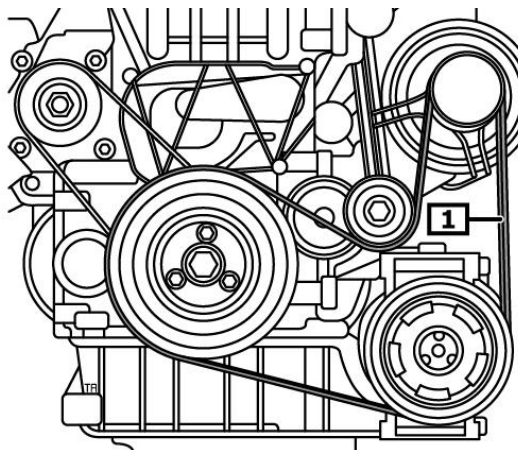


- |                     |                              |
|---------------------|------------------------------|
| 1 Installation tool | 2 Accessory belt, water pump |
| 3 Hook              | 4 Water pump belt pulley     |

Install the accessory belt of the air-conditioner and alternator. (1)

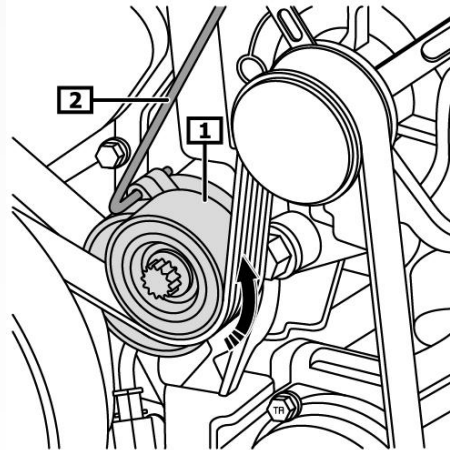
Pay attention to the correct positioning of the accessory belt.

**Figure 25**



Rotate the tensioning device anticlockwise with a suitable tool. (1)  
 Remove the tensioner roller blocking tool. (2)  
 Loosen the accessory belt tensioning device. (1)

**Figure 26**

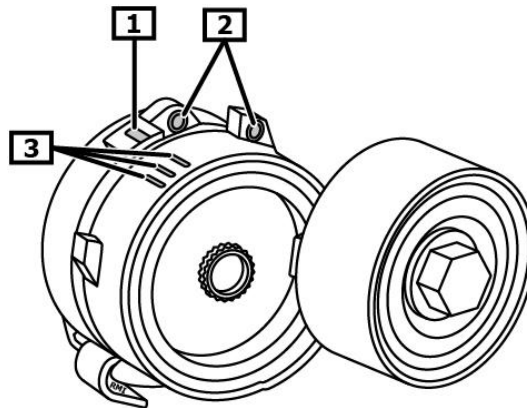


1 Accessory belt tensioner

2 Tensioner roller blocking tool

Turn the engine through two rotations of the crankshaft in the direction of operation.  
 Pay attention to the correct positioning of the accessory belt.  
 Re-check the tension of the accessory belt. (1)(3)  
 The mark must correspond to the reference mark. (1)(3)

**Figure 27**



1 Reference mark

2 Mounting hole

3 Wear mark

Fill the radiator with coolant.  
 Connect the battery.  
 Start the engine.  
 Check to see that the belt tracks smoothly/correctly.  
 Purge the air from the cooling system.  
 Take a test drive.  
 Document the timing belt replacement

**NOTE:** Using a diagnostic tool, read out the fault history.

