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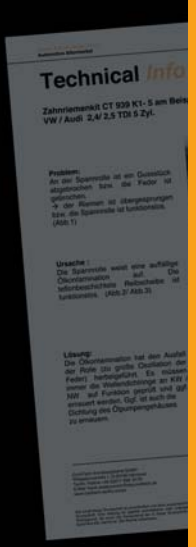

Technical *Info*

TI 1-25

Continental CONTITECH

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Installation of the timing belt kit CT 1045 K1 for Renault 1.2 16 V

Defect pattern:
The tensioner pulley collapses after a short running time and possibly has a separate barrel jacket from the bearing core.
The barrel jacket has mostly strong traces of rubbing. The back of the timing belt is often considerably damaged, and sometimes even completely worn due to heat application.

Cause of error:
Due to the eccentric being rotated in the wrong direction, the tensioner pulley reaches an impermissible position and makes contact with a protruding edge in the motor pinion. The tensioner pulley is thereby completely or partially mechanically blocked and the belt which continues to turn is overheated on the barrel jacket. The level of damage depends on the running time..

Error elimination:
Always install the timing belt exactly according to the manufacturer's instructions and in particular, comply with the rotational direction of the eccentric for tensioning. **(anti-clockwise here)** Otherwise the tensioner pulley can come into contact with a protruding edge and short-term failure is very likely.

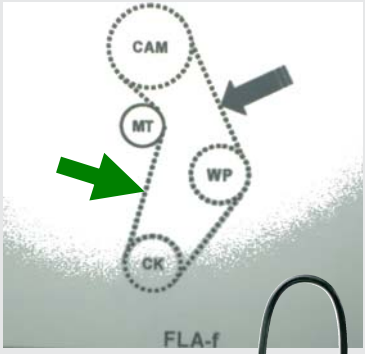
Setting Fiat timing belt tension with the new BTT Hz - Example: Punto 188 A.4 engine. (frequency metering)

Problem:
The tension setting as the cutoff voltage (T2) for the BTT Hz is specified as 150 - 160 HZ in the manual. Subjective measurement results in the timing belt being tensioned too high.

Cause of error:
The manufacturer's nominal setting with a frequency metering device, applicable since the 2003 model year, is determined by adding 2 measurements. The measured value of the green arrow at the left of the image has to be added. Older models can also be set using the BTT Hz.

Procedure:
Pretension the timing belt using a torque wrench with 7 Nm at the tensioner pulley, then secure the tensioner pulley. Perform 2 engine revolutions, then add the measuring results of both points. The total value should be 160 Hz.
Alternatively a setting of 125 Hz only above the water pump is also possible.

T1	revolution	T2	
100-110	2	150-160	FLA-f
100-110	2	150-160	FLA-f
190-210		230-245	FLA-k
160-180		205-220	FLA-aa
120-130		145-160	FLA-c
125-135		150-165	FLA-c
120-135		130-155	FLA-t
100-110	2	150-160	FLA-f
190-210		234-245	FLA-k



Installation of the drive belt kit CT 919 K1 / K3 / K4 / K5 for an Audi A4, 1.8 20V

(refitting on the hydrospanner of vehicles built before 1998)

Defect pattern:

The belt drive makes noises after operating for a short time.

Cause of error:

The newly installed tension roller is not the correct distance from the engine and allows the belt to rub at the side on the inner flanged wheel. (set back)

Error elimination:

When refitting vehicles built before and during 1998, the old version stud bolt (1) must be removed. The new version is then screwed into the same hole with a pre-mounted spacer (2). The problem here is that the manufacturer has two!! Different thicknesses of spacer **(3.1)+(3.2)** which define the distance from the roller to the engine. Despite the Vehicle Identification No. delimitation (prod. month: 01/96) it is still not absolutely unequivocal which kit must be used since the stated Vehicle Identification No. can deviate from this. One should always check whether the replaced tension roller is mounted aligned in the belt drive. There will definitely be noises produced otherwise or even grave damage to the engine.

The version to be replaced (1)

New tension roller engineering

(3.1) (3.2) (2)

Modification to the tensioning technology in the Ford 2.5 diesel (CT 1055 / CT 1054)

Problem:
The idler pulley included in the kit for the type delivered is different to the one installed in the vehicle.

Cause:
According to Ford, the new type of tension pulley has to be installed in all 2.5 diesel engine models when the timing belt is due to be changed. Given the fact that the structure has been changed completely, clarification is required on how to install or position this correctly.

Solution:
The new type is a semi-automatic tension pulley which is installed centrally in place of the manual tensioner. Following installation of the timing belt, as normal, the tension is adjusted on the disc on the front by turning it in the direction of the arrow using an Allen key. Please note, the semicircular dot marking must be correctly aligned with the bottom edge **(1)** of the recess.

Type to be replaced

New tension pulley technology
Target tension (1)

Retooling the tensioning technology in the Ford 1.8 diesel (CT 983 K1/K2)

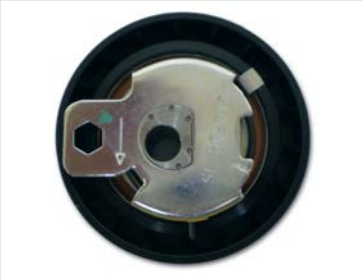
Problem:
The tensioner pulley in the kit is designed technically differently from how it is installed at the factory.

Cause:
According to Ford, the new type of tension pulley has to be installed in all 1.8 diesel engines when the timing belt is due to be changed. Given the fact that the structure has been changed completely, clarification is required on how to install or position this correctly.

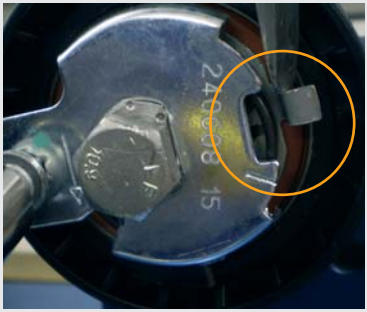
Solution:
The new type is a semi-automatic tension pulley which is installed centrally in place of the manual tensioner (50 Nm). Following installation of the timing belt, as normal, the tension is adjusted on the disc on the front by turning it in the imprinted direction of the arrow using an Allen key. Make sure that the recess is opposite the stop lug in approx. 3:00 position.

Type to be replaced

New tension pulley technology



Nominal tension



Change of CT 522 K4 tension pulley in CT 522 K1 Renault Master, Trafic and Jeep Cherokee

Problem:
The idler pulley included in the kit for the type delivered is different to the one installed in the vehicle.

Cause:
According to Ford, the new type of tension pulley has to be installed in all 2.1 diesel engines when the timing belt is due to be changed in accordance with kits referenced above. Given the fact that the structure has been changed, clarification is required on how to install or position this correctly.

Solution:
The new type is also a manual tension pulley which is installed in place of the previous tensioner. After the timing belt has been installed, the accompanying pulley is placed on the retaining plate and screwed on together. The spring with sleeve is no longer used. (not depicted) Tension is then adjusted as per instructions.
(e.g.: Conti BTT: 104 Hz +/- 5)

Type to be replaced

New tension roller with plate

Retrofitting of the V-ribbed belts on Renault 1.4 /1.6 16 V engines with K4J / K4M air conditioning

Problem:

The belt is very noisy, wears quickly and exhibits signs of abrasion. Because of the sideways oscillation, the tensile member, including the ribs, might rip out of the belt. If a timing belt starts slipping as a result, this can, in turn, lead to serious engine damage.

Cause:

The V-ribbed belt on older vehicles has six ribs (6 PK 1748). The new belt has only five ribs (5 PK1750) to set the belt off from the engines more. According to Renault, this new belt should generally be installed.

Solution:

The new 5-rib belt is placed only on the outer grooves of all belt pulleys; the inside groove remains free on all pulleys. In this connection, the generator's overrunning clutch should be checked to make sure that it is functioning perfectly and the hydraulic steering pump checked for axial clearance. (Misalignment!). Before mounting the belt, remove any abrasion from the grooved pulley using a wire brush.

Type to be replaced

Mounting instructions for CT 984 K2 and CT 1015 K2, e.g. Audi, VW 2.5 TDI V6

Problem:

The tension lever chafes against the tensioning pulley. (Fig. 1) This can result in serious damage to the engine.

Cause:

Due to improper positioning during installation **(Fig. 2)**, the tensioning lever comes into contact with the barrel jacket after the parts have been in operation only briefly. By way of illustration, the side facing the engine is shown here. (It is otherwise not visible.)

Solution:

Carefully check the position of the tensioning lever on the check stud. Only the lever contact surface shown here **(Fig. 3)** must be allowed to make contact with the catch. This ensures the jacket barrel's freedom of movement.

Fig. 1

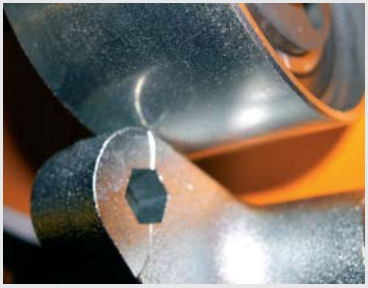


Fig. 2

Fig. 3

Change of idler pulley
CT 975 K1 to CT 975 K3 - Opel 1.6 / 1.8 16 V

Problem:
The idler pulley included in the kit for the type delivered is different to the one installed in the vehicle.

Cause:
According to the manufacturer, the new pulley with plastic barrel jacket (55373) must be intalled when the belt is changed instead of the previous metal version (55333).

Solution:
The new pulley is now equipped with a pre-mounted bolt and can used directly.

Pulley to be replaced

New idler roller

Replacement of Timing Belt Kit CT 946 K2 with Kit CT 1044 K1

Problem:
The belt supplied with CT 1044 K1 is different in terms of appearance and number identification from the CT 946 belt installed so far. **(Fig. 1)**

Cause:
The CT 1044 is reinforced with additional belt back fabric and can also be used for the older TDI engines. **(Fig. 2)**

Solution:
Kit CT 946 K2 is no longer available and has been replaced by CT 1044 K1.
The distinguishing engine number is thus omitted.

Fig. 1
CT 943

Fig. 2 CT 1044
with belt back fabric

Failure of the idler pulley from CT 941K1 due to overheating
Mitsubishi 1.8 GDI, Volvo V40/ S40 1.8

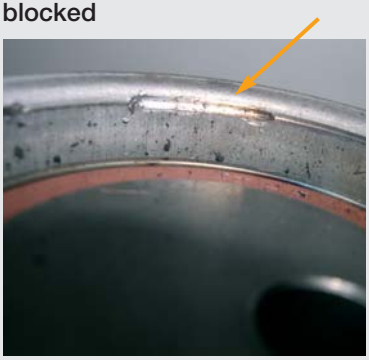
Problem:
Shortly after the kit has been installed, the idler pulley fails due to degradation/overheating. **(Fig.1)**

Cause:
Blockage of the tension pulley. This causes the belt that transmits heat to the idler pulley to overheat. As a result, the plastic cage of the bearing melts, causing the roller to fail. The blockage of the tension pulley occurs when the roller rubs against the assembly stand. **(Fig. 2)**

Solution:
The tension pulley must absolutely be clamped counterclockwise when an eccentric is used for clamping. The roller must be able to move freely on the assembly stand.
The tightening torque of 48 Nm on the fixing screw must be observed.

Fig. 1
Disassembled idler pulley

Fig. 2
Tension pulley inside mech. blocked



Timing belt CT 817
Daihatsu Cuore, all model years

Problem:
The belt is frayed on the sides and has the looks of sloppy work

Cause:
The CT817's tensile member is Kevlar.
For technical reasons, the edges appear as in **Fig. 1** after being cut.

Solution:
There is no cause for concern in using the belts. No material flaw is involved here.

Fig. 1
Edges of the CT 817

Fig. 2
Conventional timing belt

Timing belt CT 881 K2 by the example of Ford 1.25 16V/ 1.4 16 V / 1.6 16 V – Various models from 4/97

Problem:
The tension pulley delivered in the kit is designed differently from the pulley previously installed in the vehicle. (Eccentric adjustment up to pointer alignment using an allen key)

Cause:
According to the manufacturer, the new version must be installed instead of the previous one when belts are changed.

Solution:
The new pulley is now equipped with a pre-mounted cotter pin and can be installed directly. After all components have been installed, the safety cotter pin is just pulled and the tension is set automatically.

Previous pulley design

New design

Changes to the CT 1035 K1 / CT 1035 K2 tension pulley – Renault 1.5 dCi, Nissan 1.5 dCi, Suzuki 1.5 DDIS

Problem:
The tension pulley supplied in the kit is designed differently from the pulley previously installed in the vehicle. **(Fig.1)**

Cause:
There is an alternative design **(Fig. 2)**. This is supplied with the same screw and can be installed according to the vehicle manufacturer's specifications.

Solution:
Despite its different design, the tension pulley can be used for all the vehicles specified in the catalog.

Fig. 1
Previous design

Fig. 2
Alternative design

Comparison of base plates

Timing belt kit CT 939 K1- 5 based on example: VW / Audi 2.4/ 2.5 TDI 5 cyl.

Problem:
A cast part has broken off the tension roller or the spring is broken.
→ The belt jumped over it and the tension roller does not work. **(Fig.1)**

Cause:
The tension roller is obviously contaminated with oil. The Teflon-coated friction pulley does not work. **(Fig. 2 / Fig. 3)**

Solution:
The oil contamination caused the failure of the roller (excessive oscillation of the spring). It must always be checked to ensure that the shaft sealing rings on the crankshaft/camshaft function properly. If required they must be replaced.

Fig. 1

Fig. 2

Fig. 3

CT 1096 K1 timing belt kit taking as an example: Rover / MG all 2.0 / 2.5 V6

Problem:
The tension roller (Fig. 1) twists on the base frame during operation. During further operation, the running surface starts to contact the base frame and becomes blocked. **(Fig. 2)**
> The motor can be damaged!

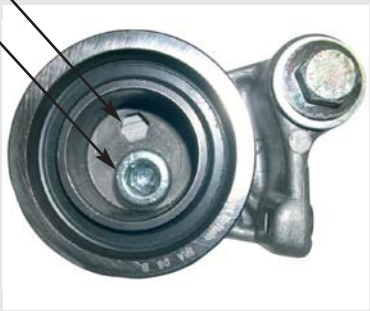
Cause:
You must ensure that the roller is only premounted to the base frame with 10 Nm.

Solution:
After the timing belt has been installed and **adjusted**, the roller must be **finally fixed** by tightening the mounting bolt with 40 -50 Nm.

Fig. 1

Fig. 2

Fig. 3



Mounting instructions for the timing belt kit CT 957 K1 / K2: e.g. Audi / Scoda / Seat 1.4 16V

Defect pattern:
The timing belt lost a great deal of its width, and tore as a result **(Fig. 1)**

Cause of error:
The timing belt shifted to the side due to a crooked tension roller **(Fig. 2)**.

Error elimination:
When the tension roller is installed, it is necessary to make sure that the arrester is latched properly in the core hole cover. When the belt drive is rotated twice, be certain to check that the belt is aligned **(Fig. 3)**.

Fig. 1

Fig. 2

Fig. 3

CT 939 K2/K3 timing belt kit, used for example in: VW / Audi 2.5 TDI 5 cyl.

Problem:

In accordance with the updated equipment status, the timing belt kit contains a thin washer (diamond-coated) that was not previously installed in the vehicle.

Solution:

According to the VW / Audi catalog, this special washer (4) is to be installed between the crankshaft drive wheel (3) and the torsional vibration damper (5). This is intended to improve the co-efficient of friction.

Fig. 1
Washer

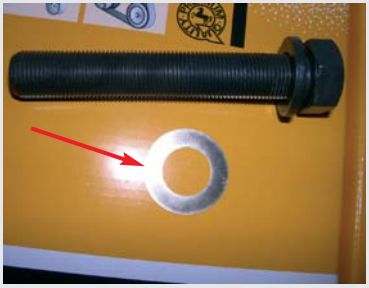
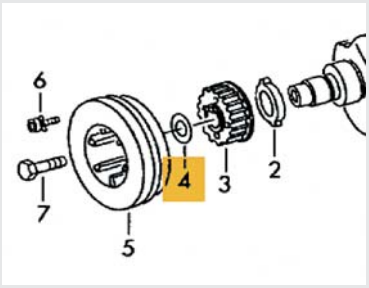


Fig. 2
Installed position



Correct Tension Pulley Installation for Kits CT 1038 K1, CT 1034 K1, CT 986 K1 and CT 731 K1

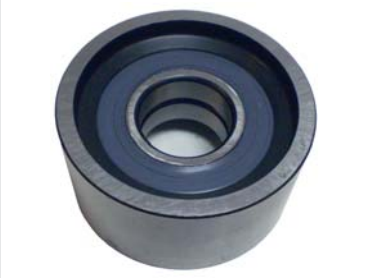
Problem:
The tension pulley supplied with the kit breaks apart after a short period of operation, normally resulting in damage to the engine.

Cause:
This is due to faulty alignment of the belt drive. The tension pulley is subjected to off-center loading and fails after a short running time.

Solution:
To ensure correct belt alignment, it is vital that the tension pulley holder is cleaned thoroughly, and that you subsequently check that the entire surface of the pulley is properly seated on the guide pin.

Disassembled bearing

Intact pulley



Guide pin of the tension pulley retaining plate

Mounting Instructions for the CT 1044 K1 Timing Belt Kit For example, Audi / VW / Skoda / Seat 1.9 TD

Type of failure:
The large idler pulley breaks away following a short period of operation due to bearing blockage. This can lead to engine damage **(Fig. 1)**.

Cause of failure:
Owing to insufficient tension, the back of the timing belt becomes heated up on the two stabilizing rollers **(Fig. 2)**.

Remedial action:
When adjusting timing belt tension, it is vital that the correct position of the marking on the tensioner pulley is checked again, even once the drive has been rotated several times. Care must be taken to make sure there is sufficient friction force at the small stabilizing rollers so that they are also driven without any slippage occurring **(Fig. 3)**.

Fig. 1

Fig. 2

Fig. 3

CT 1014 K3 retrofitting kit for diverse Opel/ GM 1.7 DTI (up to engine number 328703)

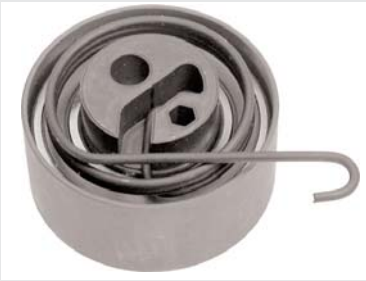
Problem:
The new pulley does not fit into the slot for the old idler pulley. The engine support bracket is now positioned at a slant to the engine and can no longer be screwed onto it.

Cause:
According to "Opel TIS", the old, mechanical idler pulley from CT 1014 K1 can no longer be used. Across the board the new type is being installed instead (as is the case ex works as of engine number 328704).

Solution:
To mount the new pulley, an enclosed stay bolt has to be screwed in to the right of the injection pump wheel. This now serves as the catch for the modified pulley spring. The old engine support bracket must also be replaced with the likewise enclosed new type. This is necessary because with the new pulley there is no longer any base plate, which also previously served as spacer plate for the engine retainer. Screws should be tightened to a torque of: **49 Nm**

old idler pulley from CT 1014 k1

new idler pulley from CT 1014 K3



engine support bracket

Installation tips for tension pulleys: CT 870 K1, CT 873 K1, CT 975 K3 – Opel 1.4 / 1.6 / 1.8 /2.0 16V

Problem:
The tension pulley makes noises after operating a certain amount of time. In subsequent operation, the arrester can break and the belt loses its tension. As a rule, this results in damage to the engine!

Cause:
When cold, the pointer on the tension pulley no longer points to the mark and hits on the cold stop after each combustion cycle (noises).

Solution:
Opel/GM specifies a special process for setting the tension when a timing belt is changed: When tensioning, the adjusting cam is to be turned counterclockwise (to the left). The timing belt drive must be rotated 2x by hand with fully tensioned tension pulley. Only after this has been done is the tension to be set by turning the cam to the right to the “new” mark. This must be done to ensure that the timing belt is "set".

Pointer position too low

Full stop setting

Final setting

Tension pulley installation: CT 887 K1 for Daewoo and Chevrolet 1.4 16 V, 1.5 16V, 1.6 16V

Problem:

The pointer on the tension pulley breaks off during installation and could severely damage the belt.

Cause:

There are two possible reasons for this:

1. Failure to loosen the water pump and to use it for adjusting the tension as descri bed in the instructions.
2. During the specified two-fold rotation of the engine at increased tension (hole marking on the baseplate) the limit stop is subjected to excessive load and the movable pointer breaks off.

Solution:

1. Make sure that the water pump is loosened, then turned using the corresponding tool OE (J-4249 2) and finally tightened again to 8 Nm.
2. The tongue of the pointer must be adjusted to ensure that it bears no load at any time. After turning the engine twice, both pointers must be perfectly aligned with one another.

Installation of the tension pulley from CT 604 K1, CT 684 K1, CT 711 K1, CT 840 K1/K2, CT 935 K1/K2, CT 940 K1/K2 , CT 949 K1 for diverse Renaults

Problem:

The tension pulley gets locked after a short period of operation. The back of the belt becomes overheated and the idler pulley suffers thermal damage.

Cause:

During tension pulley installation, attention was not paid to ensure that the pulley revolves around its axis properly and/or the nut is tightened sufficiently. This caused the pulley to twist under load and the jacket was blocked on the inside by a bent retaining plate.

Solution:

1. Care must always be taken to ensure that the tension pulley is correctly installed on the mounting surface (lug must be properly seated in the recess of the retaining plate).
2. In addition, the specified tightening torque of 50 Nm must be observed during installation.

New idler in kit
CT 1014 K2 / K5 / K3
for diverse Opel/GM 1.7 D

Problem:
The idler in kit is different from the one previously installed in vehicles.

Cause:
According to "Opel TIS", the old idler pulley **(Fig. 1)** is no longer used. The new type now being installed **(Fig. 2)** has a ball bearing with no flange.

Solution:
Despite its varying design, the new type can be installed directly instead of the old steel idler.

Fig. 1
Old idler pulley V 55317

Fig. 2
New idler pulley V 55368

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As original equipment supplier and partner to the automotive replace-ment business, ContiTech develops and manufactures power transmission belts and tensioning systems.In this field we rank among theworld market leaders. Power trans-mission technology from ContiTech features spe-cial benefits:

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111 years production know-how

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Installation Tips – Changing Timing Belts
For Model: VW-Scirocco, Golf V, VI, Plus, Jetta III, From model year 2008, Motorcode: CBDB

Large numbers of the 2.0 l common rail engine with the engine code CBDB are installed in various VW models. When the timing belt is changed, serious mistakes are often made. To ensure that changing the belts goes smoothly, ContiTech Power Transmission Group is providing mechanics with detailed installation tips. Step by step, the ContiTech expert explains how to replace belts correctly.

The manufacturer recommends that the timing belt and tension pulley be replaced as follows:

Scirocco:	2009 and older: every 180,000 km 2010 and newer: timing belt and tension pulley every 210,000 km
Golf Plus:	Timing belt every 180,000 km
Golf V:	Timing belt every 180,000 km
Golf VI:	Timing belt and tension pulley every 210,000 km
Jetta III:	2009 and older: every 180,000 km, tension roller every 360,000 km 2010 and newer: timing belt and tension pulley every 210,000 km

The working time is 2.20 hours for all engines

TIP:

When the timing belt is changed, the tension pulley, the idler pulley and the water pump should be replaced, too.

Fitters require the following special tools for belt changing:

1. Locking pin for camshaft (OE 3359)
2. Locking pin for high-pressure pump gear (OE 3359)
3. Arrester (OE T 10172, OE T 10172/4)
4. Lock ring tool for crankshaft (OE T 10050)
5. Cap wrench (OE T 10264)
6. Locking tool (OE T 10265)

Safety notes:

Turn the engine in the direction of engine rotation **ONLY** on the crankshaft gear. The crankshaft sprocket and camshaft sprocket must never be rotated after the timing belt has been removed.

- Do not use camshaft locking tool(s) as an arrester when loosening or tightening the camshaft gear.
- When turning the camshaft, the crankshaft may not be positioned at top dead center (OT).
- The timing belt may not come in contact with oil or cooling water.
- Adjustment work on the timing belt may be carried out only when the engine is cold.
- Make a note of the radio code. Disconnect the battery's negative terminal.
- We recommend that, once the timing belt has been removed, it always be replaced and not reused.

Tightening torques:

Self-locking nuts and bolts should always be replaced.

- Bolt(s) on the camshaft gear (tightening torque central bolt: 100 Nm, gear level 1: 20 Nm, gear level 2: 90°)
- Bolt(s) on the high-pressure pump gear (level 1: 20 Nm, level 2: 90°)
- Nut(s) of the tension pulley (level 1: 20 Nm, level 2: 45°)
- Center timing belt guard (10 Nm)
- Lower timing belt guard (10 Nm)
- Bolt(s) on the vibration damper (level 1: 10 Nm, level 2: 90°)
- Idler pulley (50 Nm and turn an additional 90°)

Removal:

- Remove engine cover
- Dismantle fuel filter.
- Disconnect the plug on the coolant temperature sensor
- Open clip(s). Remove the upper timing belt guard
- Remove front right wheel-house liner
- Remove drive unit belt
- Remove vibration damper
- Remove the lower timing belt guard
- Remove the center timing belt guard
- Remove coolant pipe(s)

Position the engine at top dead center cylinder 1. Note the marking(s) (fig. 1, no. 1 and fig. 2, nos. 2 and 3). The geared segment on the timing belt gear of the camshaft must be at the top (fig. 1, no. 1)

Fig. 1

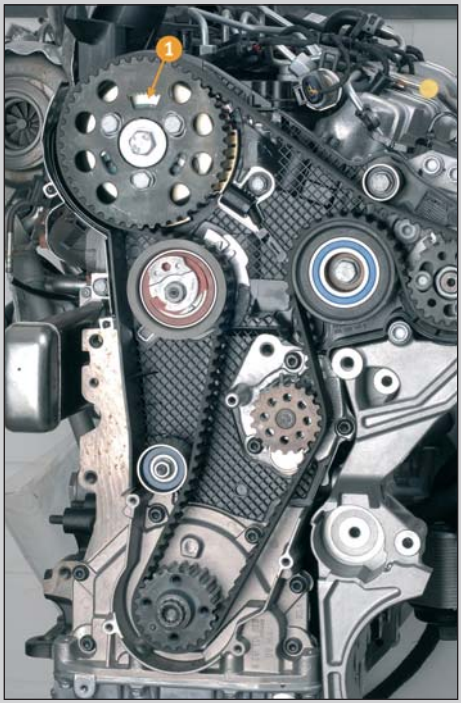


Fig. 2

Use lock ring tool for crankshaft (OE T 10050) (fig. 2, no. 1)

Markings of the crankshaft and the lock ring tool for crankshaft must align (fig. 2, nos. 2 and 3).

Lock ring tool for crankshaft: Pins must be positioned flush in the bore hole.

Use locking pins on the high-pressure pump gear and on the camshaft (fig. 3, no. 1 and fig. 4, no. 1).

Fig. 3

Fig. 4

- Loosen the bolts on the high-pressure pump gear (fig. 3, no. 2)
- Loosen the bolts on the camshaft gear (fig. 4, no. 2)
- Use arrester

Loosen the nut of the tension pulley (fig. 5, no. 1 and fig. 6, no. 1)

Using the hex key, turn the eccentric of the tension roller (fig. 5, no. 3 and fig. 6, no. 2) counterclockwise, until the tension roller can be disconnected with the special tool (fig. 5, no. 2).

Cap wrench (OE T 10264)

Locking tool (OE T 10265)

Fig. 5

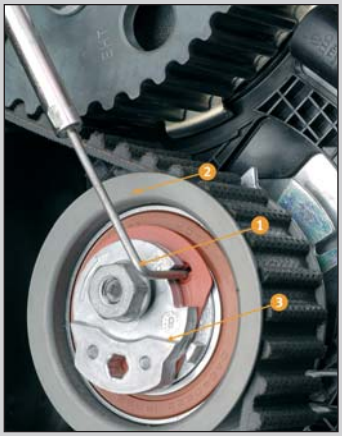
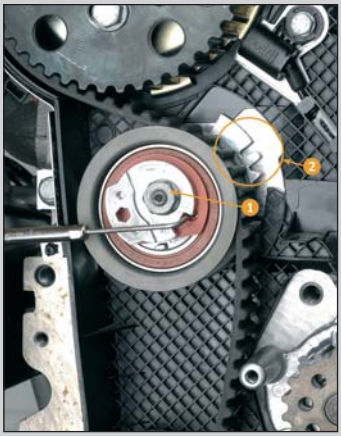


Fig. 6



Using the hex key, turn the tension pulley clockwise (max. load stop, fig. 6, no. 2.

Tighten the nut of the tension pulley slightly (fig. 5, no. 1 and fig. 6, no. 1).

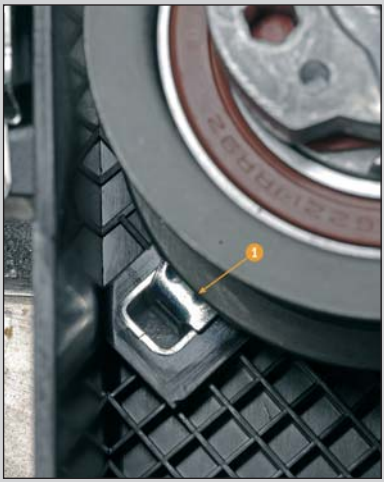
Remove the timing belt from the idler pulley first and then from the gear wheels.

Installation:

Adjustment work on the timing belt may be carried out only when the engine is cold.

Tension pulley: The nose of the base plate must be in the recess (fig. 7, no. 1).

Fig. 7



Check the top dead center marking and readjust as required.

he tension pulley must be locked using the locking tool and fixed to the stop on the right (fig. 6, no. 2).

Turn the camshaft gear clockwise to the stop.

Turn the injection pump gear clockwise to the stop.

Position the timing belt onto the crankshaft, tension pulley, camshaft gear, coolant pump, and high-pressure pump, in that order.

Loosen the nut of the tension pulley.

Remove special tool (locking tool).

Ensure that the tension roller is positioned correctly.

Using the hex key, turn the tension pulley clockwise (in the direction of the arrow).

The pointer of the tension pulley must be flush with the recess in the base plate (fig. 8, no. 1).

Fig. 8

The nut of the tension pulley may not turn while this is being done (fig. 8, no. 2).

Tighten the nut of the tension pulley (fig. 8, no. 2).

Hold the camshaft gear to maintain pretension counterclockwise (use the arrester).

Tighten the bolt(s) on the camshaft gear (fig. 4, no. 2)

Tighten the bolt(s) on the high-pressure pump gear (fig. 3, no. 2)

Remove locking pins on the high-pressure pump gear and on the camshaft pulley (fig. 3, no. 1 and fig. 4, no. 1).

Remove crankshaft lock ring tool (Fig. 2, No. 1)

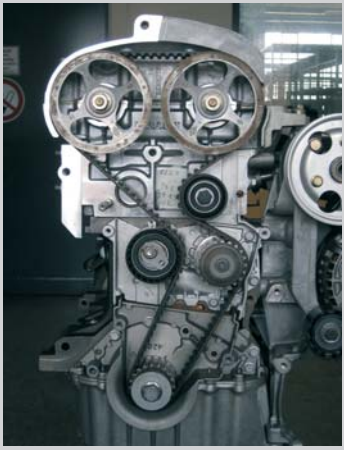
Fig. 6

- Rotate the crankshaft twice in the direction of engine rotation.
- Position the crankshaft right before the TDC of the first cylinder (fig. 6).
- Use lock ring tool for crankshaft (OE T 10050) (fig. 6, no. 1).
- Turn crankshaft until the lock ring tool can be used.
- The pin on the crankshaft lock ring tool must be directly in front of the bore hole of the sealing flange (fig. 6, no. 1).
- Turn crankshaft until the lock ring tool can be used (fig. 6).
- Check whether the camshaft can be locked with the lock ring tool.
- The pointer of the tension pulley must be flush with the recess in the base plate.
- Tighten bolt(s) on the camshaft gear..
- Tighten bolt(s) on the injection pump gear.

The rest of the installation procedure takes place as for the disassembly procedure but in the reverse order.

- Mount the drive unit belt.
- Decode the radio, program the volatile memory.
- Start the engine and check for proper function.
- Read error memory. Carry out a test drive.
- Document timing belt change.

Installation Tips – Changing Timing Belts
As an example Renault Clio II 1.6 16V
Motorcode K4M 748



Renault installs a large number of the Clio II 1.6 16V engine, with differing engine displacement, in their vehicles. When the timing belts are changed, critical mistakes are made again and again that have a negative effect on the belt drive. To ensure that changing the belts goes smoothly, ContiTech Power Transmission Group is providing mechanics with a detailed list of installation tips. Step by step, ContiTech experts explain how to replace belts correctly.

When the timing belts are changed, the tension pulley, the guide pulley and the water pump should be replaced, too. Renault recommends a belt change every 100,000 km for all models up to 1999, and every 120,000 km for all later models, or for low mileages.

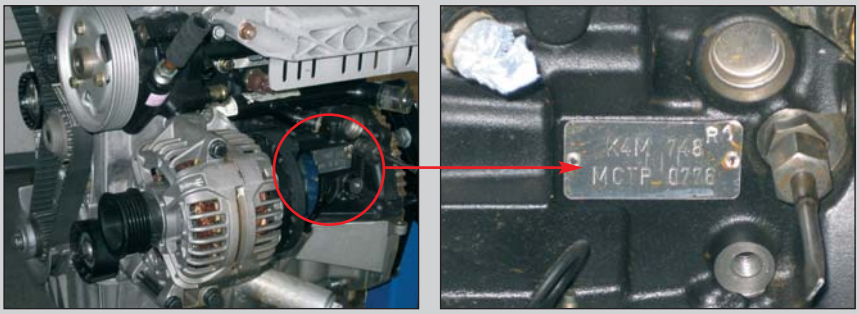
Working time:

Clio	2.70 hours
Mégane	3.60 hours
Mégane Scénic	3.90 hours
Laguna	2.50 hours

Specialtool:

Crankshaft locking pin, Renault tool code MOT1489
Camshaft alignment ruler, Renault tool code MOT1496

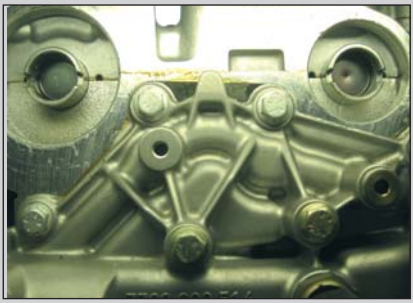
1. Identify the vehicle using the engine code on the engine block



2. Disconnect the vehicle's battery.
3. Removal:
   Drain the cooling water and support the engine. Then remove the right engine mount first and then the ancillary units with drive belts (V-ribbed belts).

Remove the plugs from the rear end of the camshaft and the plugs from the cylinder block

4. Turn the crankshaft to the right to the setting position.
   The grooves in the camshafts must be aligned



Note:

The grooves are located below the top edge of the cylinder head.

5. Then insert the locking pin into the cylinder block (tool code MOT1489)

The crank web must be up against the locking pin.

6. Then apply the alignment ruler at the rear end of the camshafts (tool code MOT1496)

7. Block the flywheel using a large screwdriver or a suitable tool and loosen the screw of the crankshaft belt pulley.

Note:

The flywheel must be securely blocked so that the locking pin does not break or become bent, or that the camshaft ruler or the camshaft itself is not damaged when loosening the crankshaft screw.

8. Remove:

Now remove the screw from the crankshaft belt pulley and take the pulley off. Then remove the top and bottom timing belt cover.

9. Loosen the nut of the tension pulley
10. Tension pulley come away from the belt

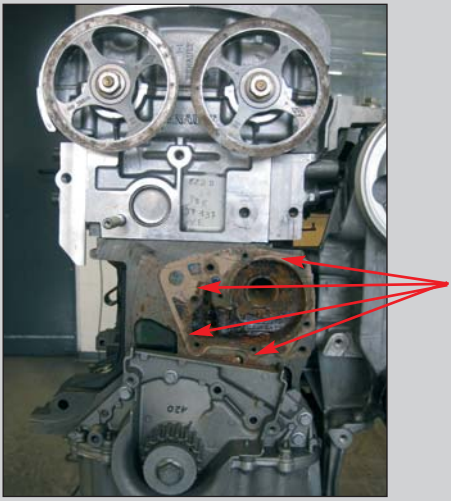
11. Remove:

- Tension pulley nut
- Tension pulley
- Guide pulley
- Timing belt
- Water pump

Note:
The crankshaft gear must not slip off the crankshaft.

Installation:

1. Check whether the locking pin is inserted. The crankshaft must be up against the locking pin.
2. The grooves in the camshafts must be aligned.
3. Also check whether the alignment ruler is correctly applied.
4. Then install the new water pump.

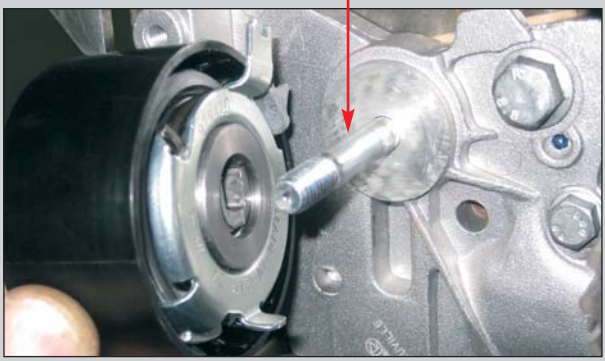


Note:

Carefully clean the sealing surface between engine block and water pump and remove any remaining seal.

Note:

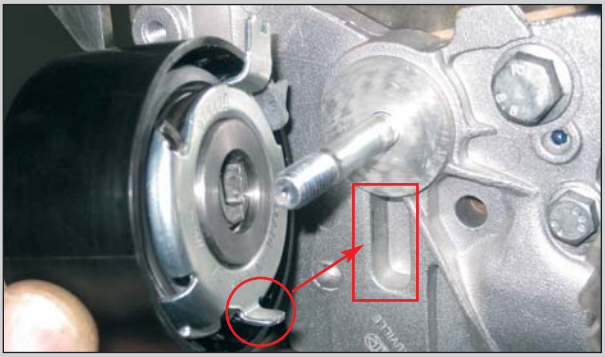
Pay attention to the tightness of the bolt that holds the tension pulley in the water pump housing.



4. Install the new guide pulley and tighten to 45 Nm.
5. Then install the new tension pulley and tighten the nut to 7 Nm for the time being.

Note:

Pay attention to the tightness of the bolt that holds the tension pulley in the water pump housing.



6. Remove the crankshaft gear and gear. Ungrease the end of the crankshaft. Reinstall the crankshaft gear.
7. Fit the timing belt going around towards the left starting from the crankshaft gear. Make sure that the timing belt is tight on the load side
8. Ungrease the crankshaft belt pulley.
9. And then install it.
10. Measure the length of the screw of the crankshaft belt pulley.
    The maximum length must not exceed 49.1 mm. If the screw is longer, then you must use a new one.
11. Screw in the crankshaft belt pulley screw.
    Do not oil the new screw.

12. Tighten the screw for the time being. Leave a gap of 2-3 mm between the contact surface of the screw and the crankshaft belt pulley.
13. Loosen the nut of the tension pulley. Turn tension pulley to the right until the movable pointer is at the right stop. Use a 6 mm hex key.

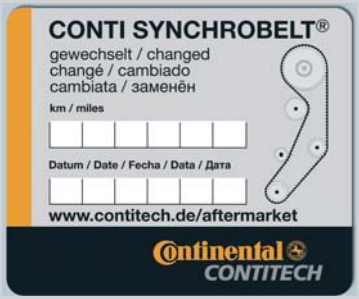
Note:

The movable point must be 7-8 mm behind the fixed pointer

14. Tighten the tension pulley nut for the time being, tightening torque: 7 Nm.
15. Block the flywheel with a large screwdriver and tighten the screw of the crankshaft belt pulley for the time being, tightening torque: 20 Nm.
16. Remove the locking pin and the alignment ruler.
17. Block the flywheel with a large screwdriver and tighten the screw of the crankshaft belt pulley by a further 120-150 degrees.
18. Turn the crankshaft two rotations to the right into the setting position. This is an extremely important step. If this is not done, the belt drive will start making noise in a short time due to insufficient tension.
19. Insert the locking pin into the cylinder block.
20. The crank web must be against the locking pin.
21. Check whether you can easily apply the camshaft alignment ruler.

22. Lock the tension pulley using a 6 mm hex key.
    Loosen the nut of the tension pulley.
23. Turn the tension pulley to the left until the pointer is aligned with the notch

24. Tighten the tension pulley nut, tightening torque: 27 Nm.
25. Remove the locking pin.
26. Turn the engine drive two more times, check the setting
    and adjust if necessary.
27. Den Verschlussstopfen eindrehen
28. Insert the plug by turning and insert new plugs at the end of the camshaft.
29. Install the components in reverse order of removal. Fill up the cooling water
    and vent the cooling system.
30. Record the replacement of the original ContiTech timing belt on the
    supplied sticker and affix it in the engine compartme.



31. Test run the engine or take a test drive.

Notes

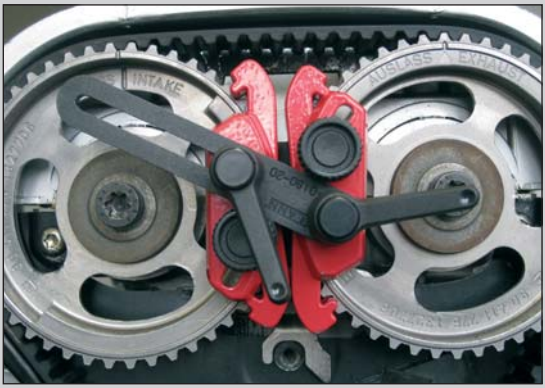
Installation Tips – Changing Timing Belts
As an example Opel 1.8i 16V C 18 XE

The 1.8i 16V C 18 XE engine – with varying engine displacement – is installed in a large number of Opel models. In changing the timing belt, however, serious mistakes are often made when the tension pulley is adjusted. To ensure that changing the belts goes smoothly, ContiTech Power Transmission Group is providing mechanics with detailed installation tips. Step by step, ContiTech experts explain how to replace belts correctly.

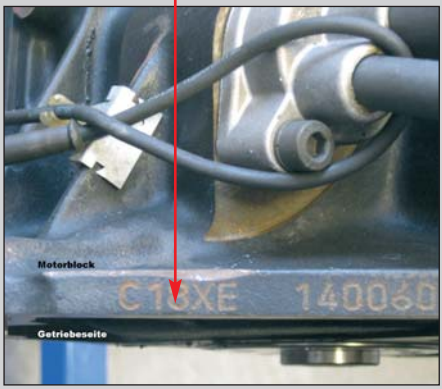
When the timing belts are changed, the tension pulley, the guide pulley and the water pump should be replaced, too. Opel recommends replacement after 60,000 km or every four years.

Working time:
Astra F - 1,8: 0.90 hours

Spezialwerkzeug:
When carrying out a replacement, mechanics need a tool to lock the camshaft, for instance the Multilock from the CONTI® TOOL BOX. On an Astra F, it takes about one hour to replace the parts.



1. Identify the vehicle using the engine code, which can be found on the outer edge of the transmission mounting flange on the engine block .



2. Disconnect the vehicle's battery

3. Removal:

Next, dismount the air filter, the air intake hose and, on engines with the code C 18 XE/XEL, also the air mass sensor.

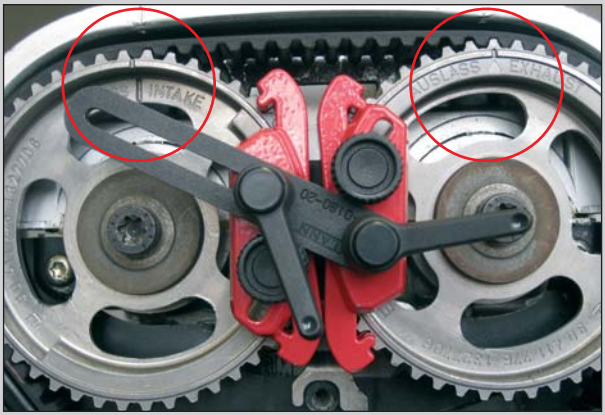
Support the engine and remove the right engine mount, the auxiliaries and the V-ribbed belt. Then dismount the pump of the power steering and the air-conditioning compressor and remove the timing belt cover.

Disassembling the timing belt:

Turn the crankshaft to the right until the control mark on the crankshaft pulley aligns with the tip on the engine block.

2. On camshaft pulleys with a single control mark, make sure that the mark of the respective camshaft pulley is aligned with the marks of the valve cover.

   On camshaft pulleys with two control marks, check that the “INTAKE” and “EXHAUST” control marks are aligned with the marks of the valve cove



3. Lock the camshaft with the locking tool.

Note:

Wird der Zahnriemen ohne das Arretieren, von den Nockenwellen genommen, verdrehen sich die Nockenwellen und die Steuerzeiten sind verstellt. Ein korrektes Auflegen des Zahnriemens ist nicht mehr möglich. Hier kann man jetzt nur noch mit unsachgemäßer Montage die Nockenwellen in Montageposition bringen.

Remove the crankshaft screw and loosen the tension pulley screw.

Turn tension pulley to the right until the pointer is at the left stop. Here, the tab attached with a hexagon socket screw must move clockwise downwards. Use a hexagon socket wrench here.

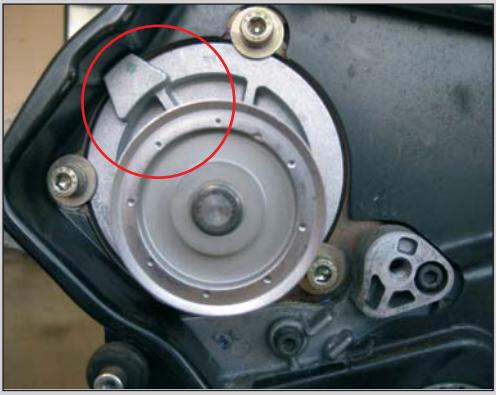
You can now remove the timing belt.

Drain cooling water and dismount the tension and idler pulleys and the water pump.

Replace idler pulleys and water pump.

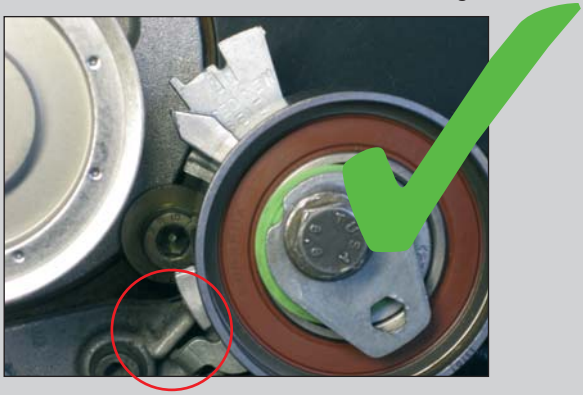
Note:

When installing the water pump, make sure that it is positioned correctly. The nose of the water pump must be placed in the recess of the rear timing belt housing.

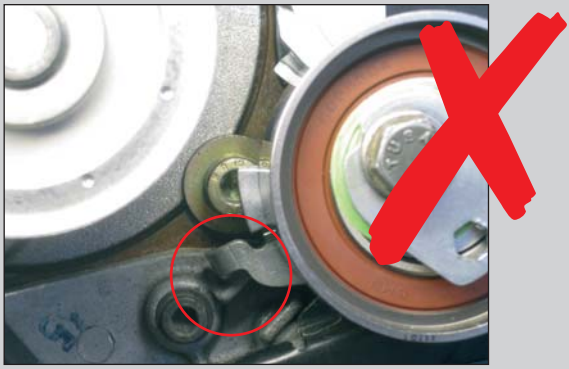


Installation of the timing belt:

10. Now install the new tension pulley. Make certain that the counter support on the back of the tension pulley (base plate of the tension pulley) is positioned between the contact surfaces on the engine block and not next to them.



und nicht daneben…



11. Position the new timing belt against the rotational direction starting at the crankshaft gear.

12. Turn tension pulley with the adjusting cam to the left until the pointer is at the right stop. Here, the hexagon socket screw moves counterclockwise upwards. Use a hexagon socket wrench. Then tighten the new tension pulley slightly.

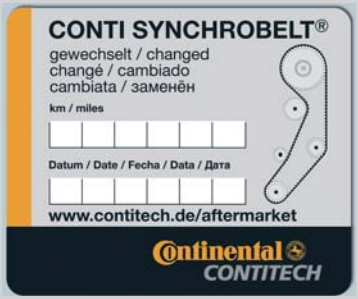
Note: This is an especially important step. If this is not done, the belt drive will start making noise in a short time due to insufficient tension.

Now rotate the engine by hand in the running direction at least twice after removing the locking tool.

13. Loosen the screw of the tension pulley and turn the tension pulley to the right until the pointer is aligned with the notch in the bracket.

Tighten the screw of the tension pulley with a force of 20 Nm.

14. Turn the engine drive two more times, check the setting and adjust if necessary.
15. Install the components in reverse order of removal. Fill up the cooling water and vent the cooling system.
16. Record the replacement of the original ContiTech timing belt on the supplied sticker and affix it in the engine compartmen.



17. Test run the engine or take a test drive..

Installation Tips – Changing Timing Belts
Audi A4, A6, A8, VW Passat 2.8 30V

The 2.8L 30V engine is installed in Audi and Volkswagen car models in large numbers. When changing the timing belt, critical errors are often made, for example in handling the tension pulley. To ensure that belt changing goes smoothly, ContiTech Power Transmission Group is providing fitters with detailed installation tips. Step by step, ContiTech experts explain how to change belts correctly.

TIP:

When the timing belt is changed, the tension pulley, the tensioner, the idler pulley, the water pump and the thermostat should also be replaced at the same time. Audi and VW recommend performing a change every 120,000 km.

Note:

Fitters require the following special tools for belt changing:

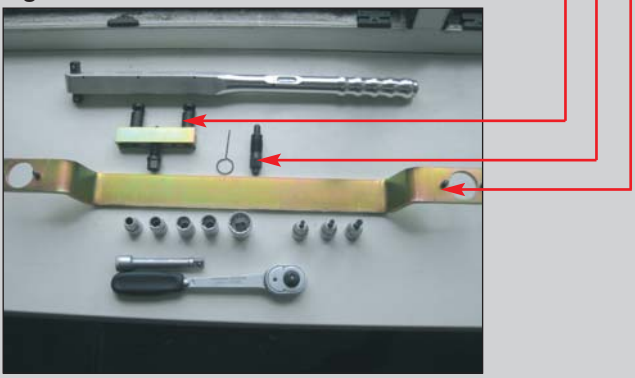
1.) Crankshaft locking tool no. 3242
(for example, from the CONTI® TOOL BOX)

2.) Camshaft locking tool no. 3391

3.) Camshaft sprocket remover no. 3032

4.) Supporting sleeves no. 3369

Fig. 1



Working time:

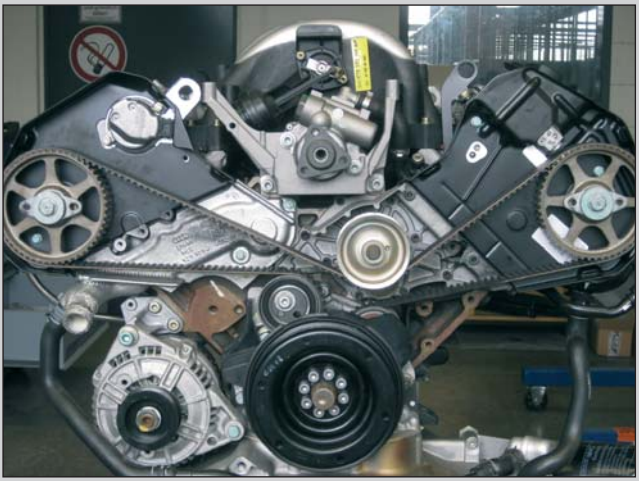
A4	2,90 hours
A6 (up to 1997)	2,50 hours
A6 (later 1997)	3,50 hours
A8	1,90 hours
Passat	3,30 hours

Preparatory work:

Identify the vehicle using the engine code and disconnect the vehicle battery. Here it is important to keep in mind that when the timing belt has been removed, the crankshaft and the camshaft must not be turned. Remove spark plugs so that the engine can turn more easily. Turn the engine in its normal direction (clockwise). The engine must only be turned at the crankshaft sprocket and not at other sprockets! Observe all tightening torques.

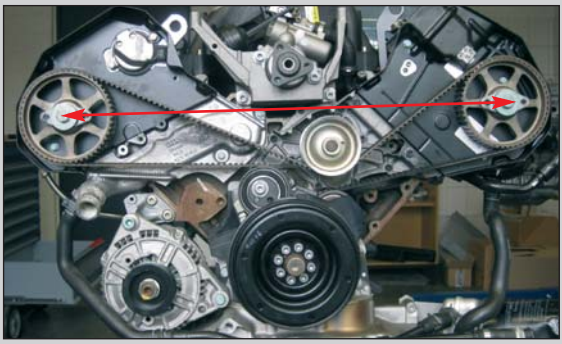
Removal:

1. Jack up the vehicle at the front and support it.
2. For the Audi A4 and A6 (1997 and later models) the cooler support plate must also be put into the service position:
   - Remove the front bumper
   - Remove the air intake hose between the front panel and the air filter
   - Remove the screws in the front panel
   - Attach the support sleeves no. 3369 in the front panel
   - Push the front panel forwards
   - Insert the top back screws into the front holes to hold the panel .
3. Removal:
   Remove viscous fan (left-handed thread), timing belt ancillary units, left and right timing belt cover.



4. Turn the crankshaft right to TDC (OT) in the third cylinder. The control marks have to match up.

5. The large holes on the mounting plates for the camshaft sprockets must be opposite each other.



6. If this is not the case, turn the crankshaft to the right a further complete turn.

Remove the plug from the crankcase and screw in the crankshaft locking tool (no. 3242)

Note:
The TDC (OT) hole in the crank web must be in line with the hole for the plug.

8. urn the tension pulley to the right until the holes in the clamping rod line up with those in the tensioner casing. Use an 8 mm hex key

Hold the clamping rod by inserting a locking pin with a diameter of 2 mm through the hole in the tensioner casing

Note:

Always insert the hex key completely into the hex socket screw of the tension pulley to ensure that the power is transmitted over a large area when turning the tension pulley against the piston of the damper. If this is not the case, then the tension pulley eccentric may break or tear. Note: We recommend working with patience when pushing the piston rod into the damper casing by turning

the tension pulley. The piston takes some time to push out the oil in the damper .

9. Remove:

- The screws of the crankshaft belt pulley (not the crankshaft pulley))
- The crankshaft belt pulley
- The viscous fan mount

Note:
For the Audis, the two screws on the mount can be reached through the hole in the belt pulley. (Audi)

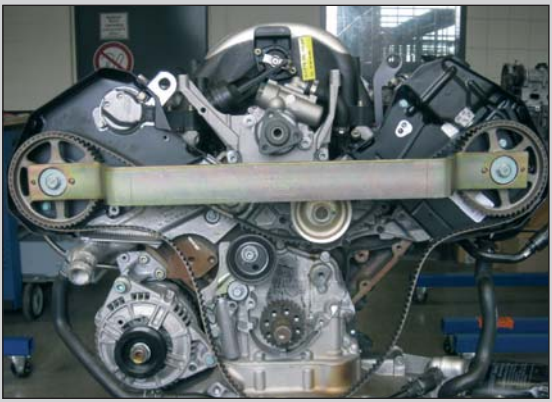
- Remove the lower timing belt cover
- Remove the timing belt .

Note:
When removing the tension pulley, remember to put the spacer back between the engine and the tension pulley

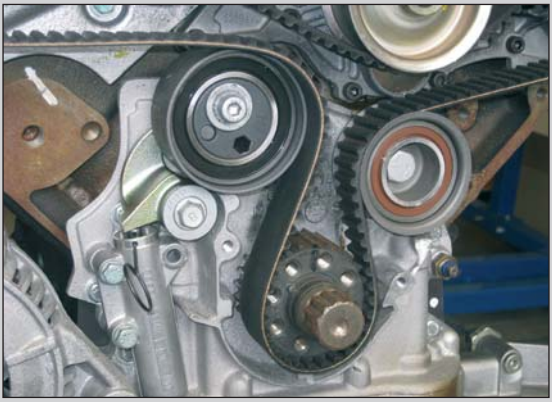
Installation:

1. Remove the camshaft sprockets.
2. Screw in an M10 screw into the camshaft as a counter bearing for the camshaft sprocket remover.
3. Loosen and remove both camshaft sprockets from their tapered end. Use the remover no. 3032
4. INSTALL:
   - Mounting plates,
   - Screws
5. Slightly tighten the screws for the camshaft sprockets.
6. The camshaft sprockets must turn easily without tilting..

7. Place the timing belt around the camshaft sprockets and the water pump belt pulley.
8. Fit the locking tool (no. 3391) on the camshafts.
9. The crankshaft locking tool must be fitted.



10. Place the timing belt around the guide roller, crankshaft sprocket and tension pulley.



11. Slightly turn the tension pulley to the right. Use an 8 mm hex key for this. Remove the locking pin from the tensioner casing to release the clamping rod.
12. Apply the torque wrench to the hex socket screw of the tension pulley.
13. Tension the timing belt to 15 Nm by turning to the left.

14. Then remove the torque wrench.
15. Tighten the camshaft sprocket screw to 55 Nm.
16. Removal:
    Remove the camshaft locking tool and the crankshaft locking tool.
17. Screw the plug in.
18. it the crankshaft belt pulley. The notches must be aligned to the nipple on the crankshaft sprocket (Audi).
19. Tighten the screws on the crankshaft belt pulley for VW to 25 Nm (Audi 20 Nm).
20. Install the components in reverse order of removal.

Record the replacement of the original ContiTech timing belt on the sticker provided and affix it in the engine compartment.

Test run the engine or take a test drive.

www.contitech.de/aam

Power Transmission Group

Market Segment
Automotive Aftermarket

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