

# ContiTech: Expert Tips for Changing Timing Belts

- **Detailed instructions for timing belt kit CT999WP1 in a Fiat Panda MY 2004, 44 kW 1.2-liter engines up to engine number 2533528 with engine code 188.A4.000**
- **ContiTech shows how to avoid errors when changing belts**

Significant errors are frequently committed when changing the timing belt. To ensure that the belt change operation goes smoothly, the ContiTech Power Transmission Group provides fitters with a detailed installation guide. In this, ContiTech experts provide a step-by-step explanation of the correct change procedure.

The manufacturer recommends changing the timing belt up to organization number 10489 every 120,000 km/10 years.

The labor time is 1.6 hours.

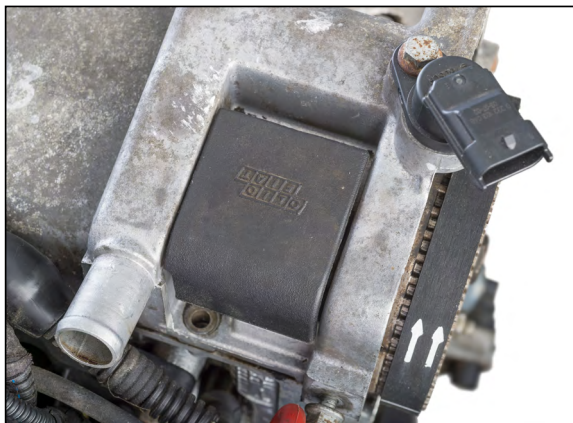
Tip: The multi V-belt ought to be changed at the same time as the timing belt. To avoid later failures with unnecessary costs, it is recommended that you do not re-install the belt once it has been removed.

Fitters need the special tools specified below for the procedure.  
You will also find the tools in the ContiTech Tool Box V02.

1. Tensioning wrench in ContiTech Tool Box V02/4
2. ContiTech BTT Hz belt tension tester

## **Preparatory work:**

Identify the vehicle using the engine code. Two different engine types can have been fitted. The differentiating feature is the oil filler cap. There are round and square caps. This instruction leaflet describes the engine with the square oil filler cap (Fig. 1).



*Fig. 1*

Disconnect the vehicle battery. Do not turn the crankshaft and camshaft once the timing belt has been removed. Turn the engine in the normal direction of rotation (clockwise) unless otherwise specified.

Turn the engine only at the crankshaft sprocket and not at other sprockets. Only carry out checks and adjustments when the engine is cold. Avoid contact between the belt and harmful substances, such as engine oil or coolant.

Comply with all the tightening torques specified by the vehicle manufacturer.

Removal: Remove ancillary unit belt, air filter, front right wheel and fender shield, upper and lower timing belt guards, and crankshaft belt pulley. Position engine support, then secure and support engine. Remove engine mount bolts in order shown (Fig. 2). Drain cooling water.

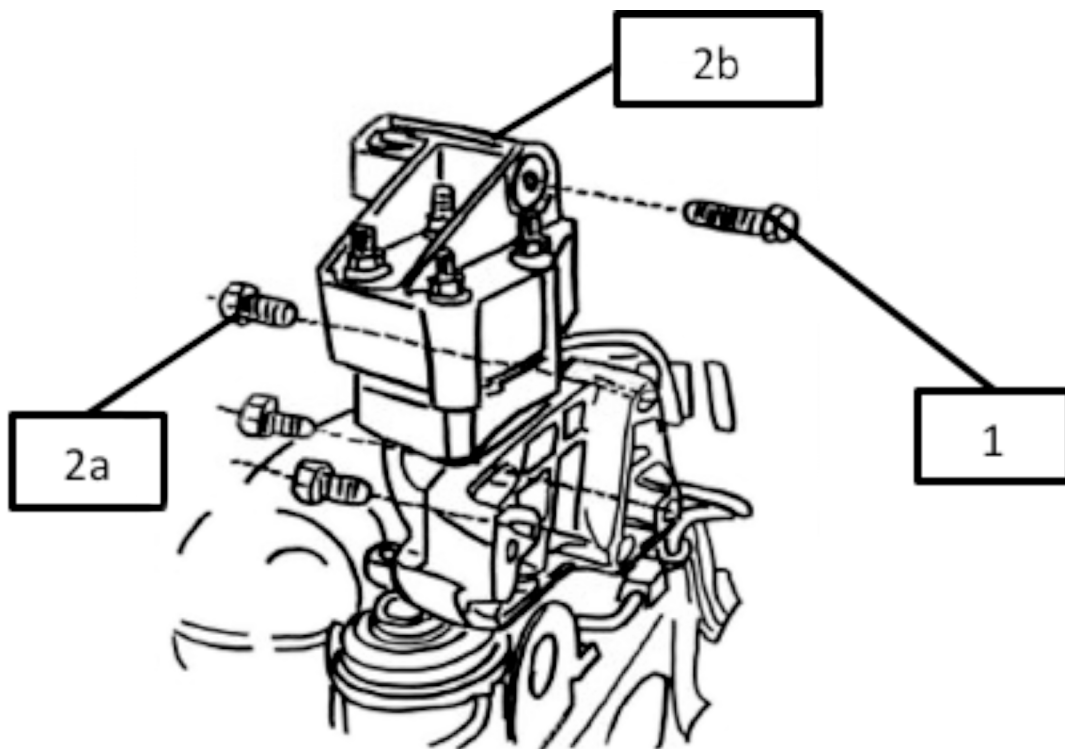


Fig. 2

## Removal – camshaft belt:

1. Set valve timings to TDC mark of cylinder 1.
2. Mark (notch) at approx. 9 o'clock position on camshaft sprocket must align with notch in cylinder head (Fig. 3).

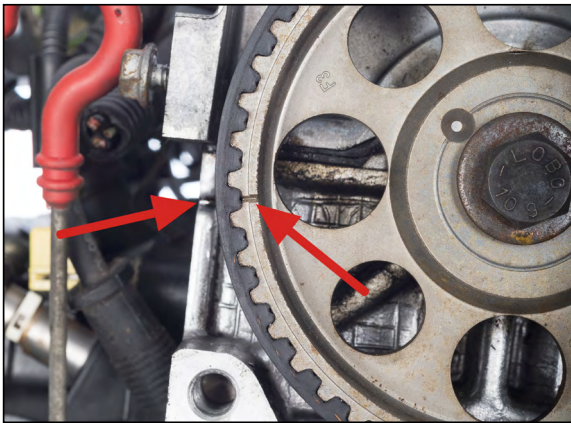


Fig. 3

3. Check position of crankshaft. Crankshaft sprocket mark (notch) must align with mark (notch) at approx. 9 o'clock position on engine housing (Fig. 4).

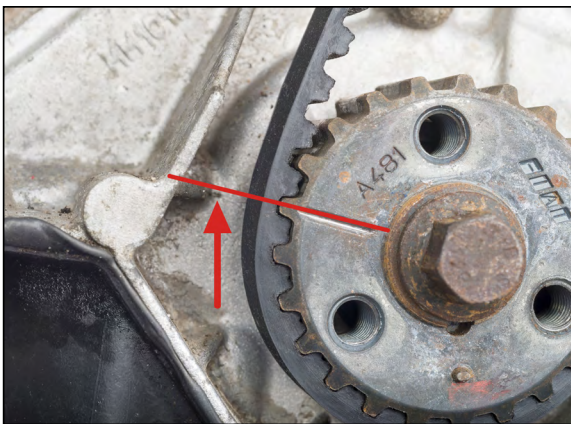


Fig. 4

4. Loosen tensioning pulley nut and release tension on timing belt.

5. Timing belt can now be removed.

### **Installation – camshaft belt:**

1. Thoroughly clean water pump seal flange on engine block and remove all traces of old sealant. Fit new components from timing belt kit. Sparingly apply sealant to water pump flange groove (Figs. 5, 6). After fitting water pump (10 Nm), wait at least one hour before filling with coolant and fitting timing belt (vulcanization time for adhesive). If this waiting time is not observed, leaks can later occur at water pump seal surface! Check remaining components such as camshaft sprocket and crankshaft sprocket for damage.



*Fig. 5*



*Fig. 6*

2. Align timing belt at camshaft sprocket with line marked on timing belt and timing marks at approx. 9 o'clock position (notch on cylinder head and notch on camshaft sprocket) and fit on coolant pump, crankshaft sprocket and tensioning pulley in direction of engine rotation (Figs. 7, 8). **Note arrow indicating running direction (Fig. 9).** Take care to ensure that timing belt is not kinked during fitting! Timing belt must be tight between sprockets on tight side.

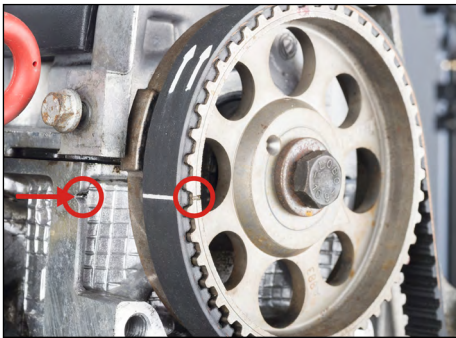


Fig. 7



Fig. 8



Fig. 9



3. Pretension timing belt via tensioning pulley. To do so, insert tensioning wrench into tensioning pulley, turn tensioning pulley counterclockwise, and tension to either 7 Nm (Fig. 10) or approx. 250 Hz. Position measurement head of BTT Hz in correct location approx. 1-2 cm above timing belt. Measure above timing belt (Fig. 11) using just one of measurement head's microphones – not both, otherwise no reading will be achieved (Fig. 12).

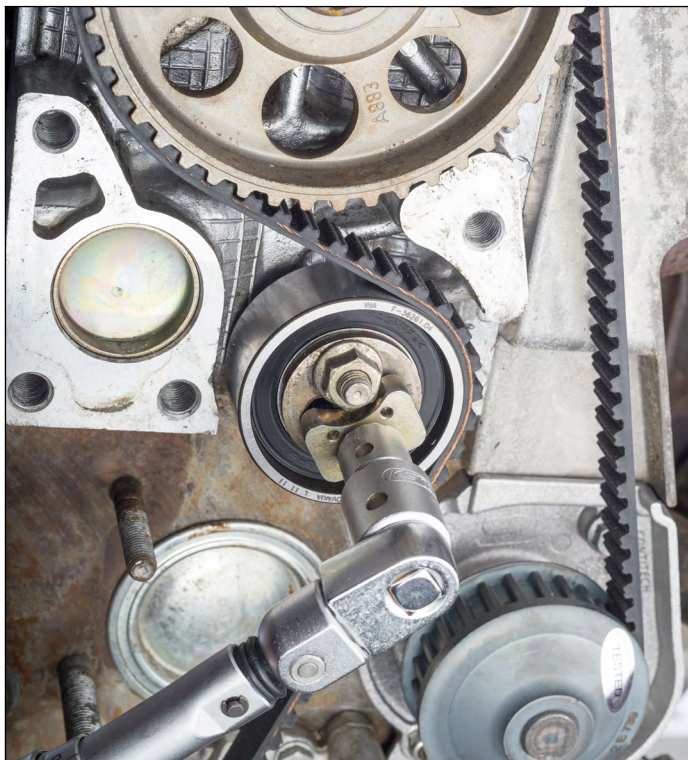


Fig. 10



Fig. 11



Fig. 12

Make timing belt oscillate near measurement head by plucking or flicking it and check hertz reading on BTT Hz display. With this model 2 measurements (Fig. 13) must be taken and their values then added together (Figs. 14, 15). Sum must come to 250 Hz. Tighten tensioning pulley nut. Turn crankshaft twice and set to TDC of cylinder 1 again.

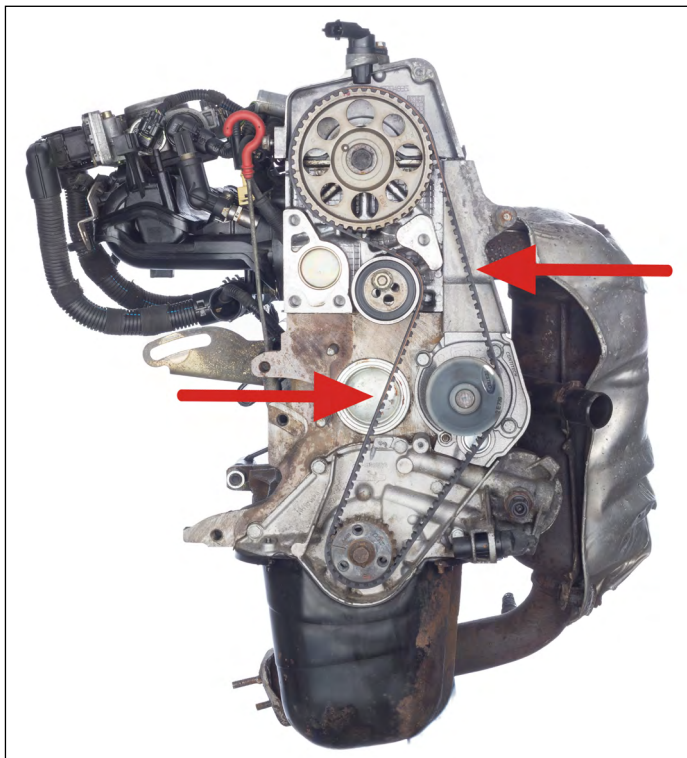


Fig. 13

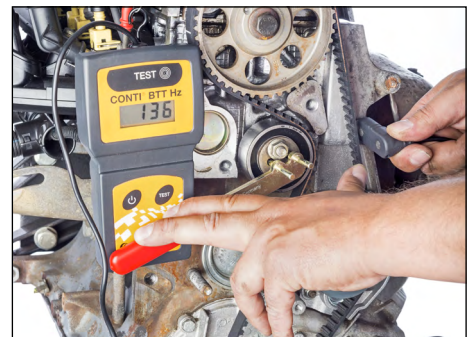


Fig. 14

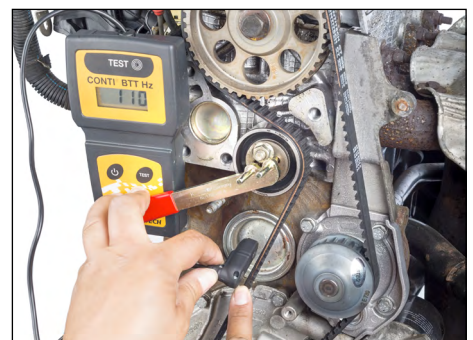


Fig. 15



4. Use BTT Hz tension tester as an aid when tensioning timing belt. Determine appropriate setting and correct set position using BTT Hz data booklet. Loosen tensioning pulley nut, insert tensioning wrench into tensioning pulley, and position measurement head of BTT Hz at correct position approx. 1-2 cm above timing belt. Make timing belt oscillate near measurement head by plucking or flicking it and check hertz reading on BTT Hz display. With this model 2 measurements (Fig. 13) must be taken and their values then added together (Figs. 14, 15). Sum must come to 160-210 Hz. If reading is not correct, turn tensioning pulley counterclockwise until reading is set on display.

5. Once correct tension reading is set, tighten tensioning pulley nut and turn engine through 2 revolutions in direction of engine rotation.

6. Set valve timings to TDC mark of cylinder 1. Setting as for items 2 and 3 of Removal above. Mark (notch) at approx. 9 o'clock position on camshaft sprocket must align with notch in cylinder head (Fig. 3). Check position of crankshaft. Crankshaft sprocket mark (notch) must align with mark (notch) at approx. 9 o'clock position on engine housing (Figs. 4, 16).

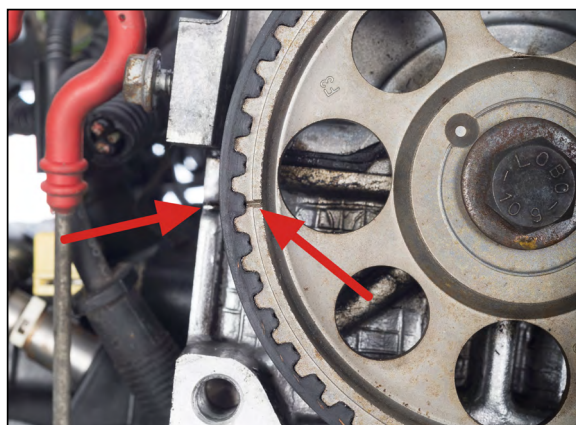


Fig. 16

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7. Check timing belt tension reading again. Sum of 2 readings must reach 160-210 Hz. If reading is not correct, turn tensioning pulley counterclockwise until reading is set on display.

8. Tighten tensioning pulley nut.

9. Assembly and finalization in reverse order to removal. Engine mount tightening torques:  
M10 x 1.25 = 60 Nm, M8 x 1.25 = 22 Nm

10. Record changing of original ContiTech timing belt on sticker supplied and stick this in engine compartment (Fig. 17).



Fig. 17

Then carry out a test run or test drive.