

RENAULT

Technical Note 3786A

DXX, and D4D or D4F or D7D or D7F - FXX, and F4P or F4R or F5R or F8Q or F9Q - GXX, and G9T or G9U - KXX, and K4J or K4M or K7J or K7M or K9K - LXX, and L7X - PXX, and P9X - SXX, and S8W or S9W - VXX, and V4Y - ZXX, and ZD3

D, F, G, K, L, P, S, V, ZD3 engine belt tensions

Sub-sections concerned: 10A - 11A - 16A - 62A - 62B - 62C

Presentation of the new belt tension measuring tool Mot. 1715.

Procedures for using belt tension measuring tools Mot. 1505 and Mot. 1715.

Recommendations for fitting the timing and accessories belts.

Tension values (frequency in Hertz)

Refer to Technical Note 3787A for the tension values of other engines.

This note cancels and replaces Technical Notes 3247A and 3360A

77 11 327 282

OCTOBER 2003

Edition Anglaise

"The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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D, F, G, K, L, P, S, V, ZD3 engine belt tensions

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Belt tension tester:Use

DXX – KXX – FXX – GXX – SXX – PXX – VXX – ZXX – LXX

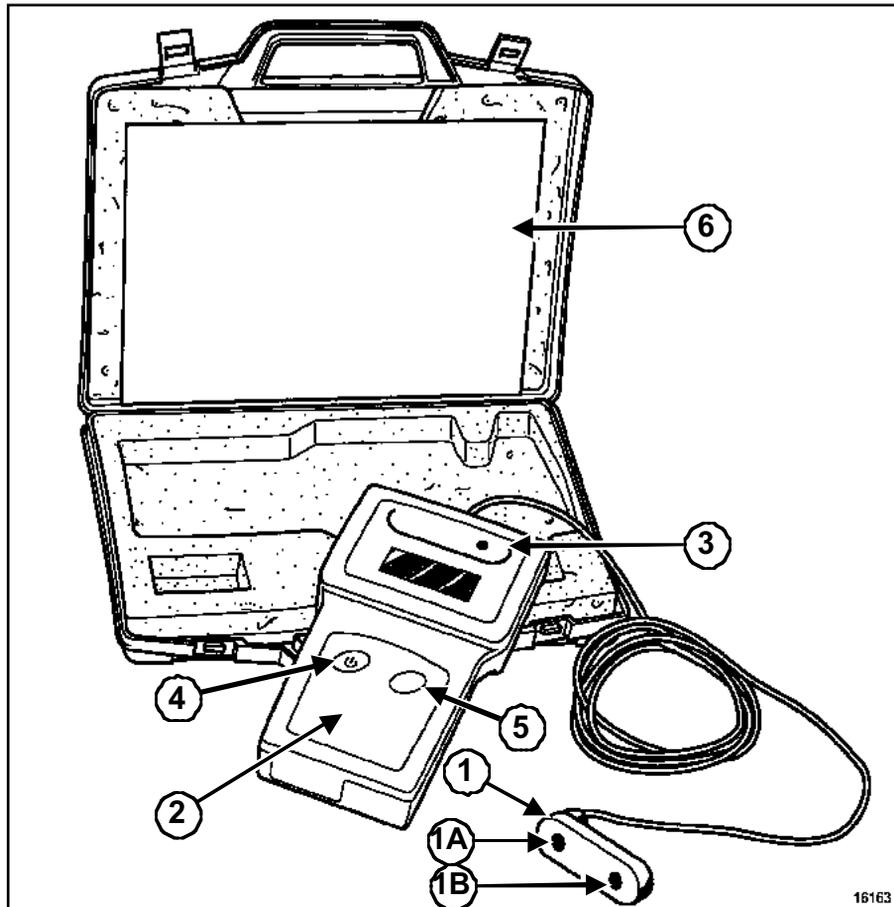
Essential special tooling		
Mot. 1505	FXX	Belt tension setting tool (frequency meter)
	–	
	DXX	
	–	
	GXX	
	–	
	KXX	
	–	
	LXX	
	–	
	PXX	
	–	
	SXX	
–		
VXX		
–		
ZXX		
Mot. 1715	FXX	Belt tension setting tool (frequency meter)
	–	
	DXX	
	–	
	GXX	
	–	
	KXX	
	–	
	LXX	
	–	
	PXX	
	–	
	SXX	
–		
VXX		
–		
ZXX		

- The belt tensioning process is an important operation, as it determines the belt's service life.
- Using the frequency meter: tool (Mot. 1505) or (Mot. 1715) is essential for applying a fitting tension compliant with the manufacturer's recommendations.
- This process eliminates risks of overtension (or undertension), noise phenomena and any problem caused by incorrect belt tension.
- Failure to strictly apply the tensioning process with tool (Mot. 1505) or (Mot. 1715) may destroy the engine.

DXX – KXX – FXX – GXX – SXX – PXX – VXX – ZXX – LXX

I - OPERATION OF TOOL MOT.1505

1 - Description



16163

16163

- (1) Reading head with two sensors (1A) and (1B)
- (2) Display unit
- (3) Calibration frequency generator ($512 \pm 1\text{Hz}$) built into display unit
- (4) Device on/off switch
- (5) Test button to check the device is correctly calibrated
- (6) Device user manual

2 - Tool check

The calibration frequency generator (3) built into the display unit can be used to check that the tool is operating correctly.

Refer to the user manual for the checking procedure.

If the check value on the two sensors differs by $512 \pm 1\text{Hz}$, return the device to ONE-TOO.

ONE TOO

1 ZAC de Saint Esteve

06640 Saint-Jeannet les Plans

Tel: +33 (0)4 92 12 04 80

Fax: +33 (0)4 92 12 04 66

DXX – KXX – FXX – GXX – SXX – PXX – VXX – ZXX – LXX

3 - Operating principle

This device measures the belt frequency.

Frequency is a physical unit which here reflects the belt tension level very accurately.

The unit employed is Hertz (**Hz**).

The reading head (**1**) comprises two sensors (**1A**) and (**1B**), which are used to measure the belt vibrations after a stimulus is applied.

The measurement must not be made with just one sensor, the other is used as a reference, and should be outside the measurement field.

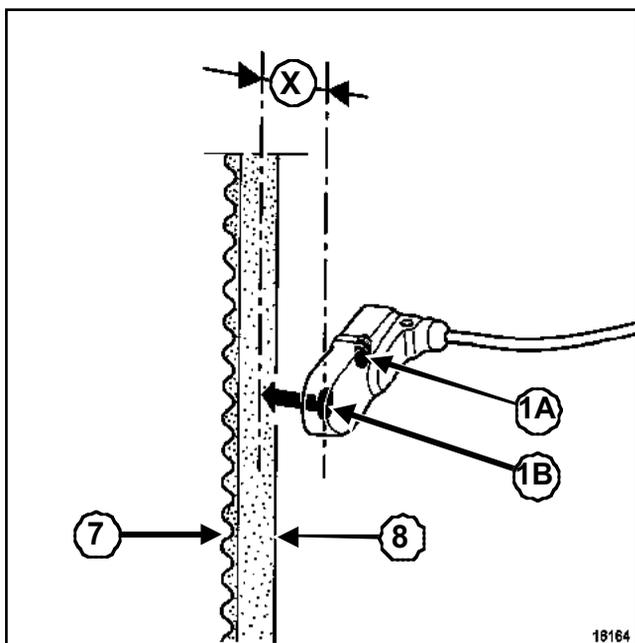
Both of these sensors can be used either as measuring sensor or as a reference sensor.

Measuring range: **30 to 520 Hz**.

Uncertainty: $\pm 1 \text{ Hz} < 100 \text{ Hz}$ and $\pm 1\% > 100 \text{ Hz}$.

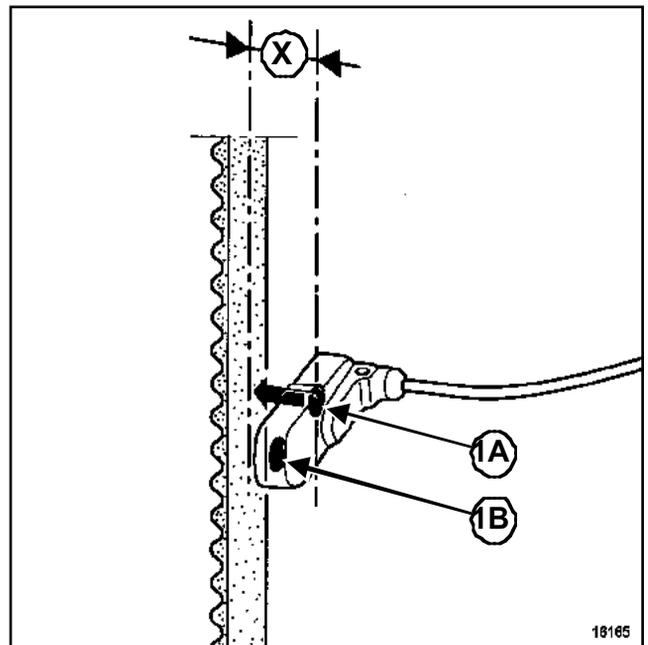
Switch the tool on using switch (**4**).

Bring the reading head (**1**) up to the belt section to be measured.



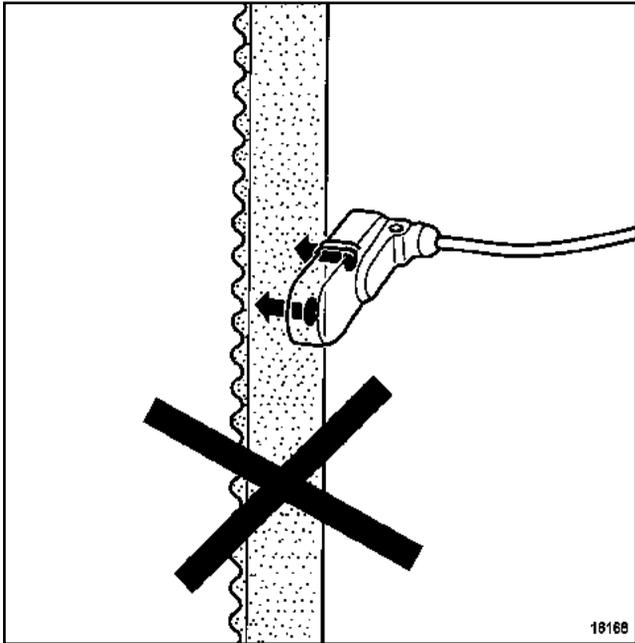
Position the reading head at a distance (**X**) of between around **5 and 10 mm** inclusive from the belt.

The measurement can be made on either face (**7**) or (**8**) of the belt, according to the dimensions.

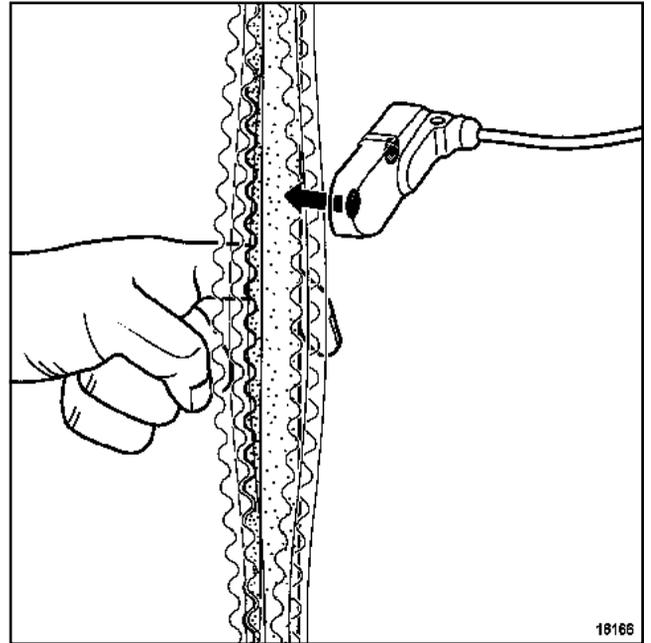
18165
16165

Use either sensors (**1A**) or (**1B**), as long as the reference sensor is outside the measurement field.

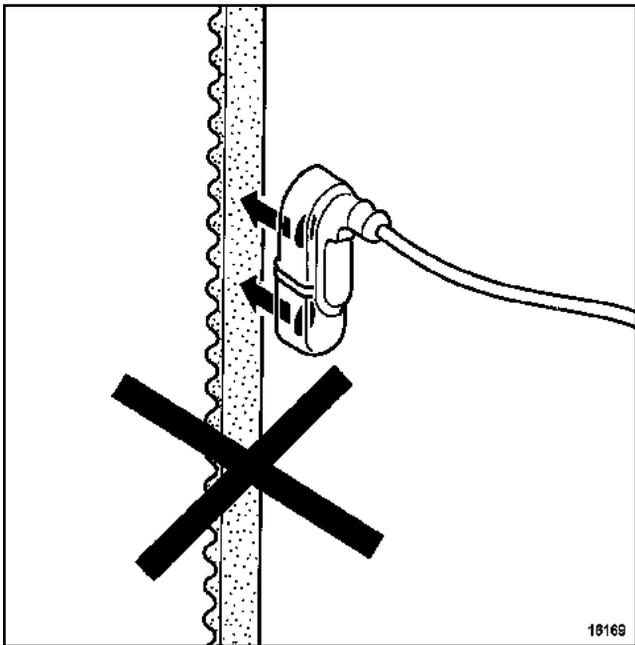
DXX - KXX - FXX - GXX - SXX - PXX - VXX - ZXX - LXX



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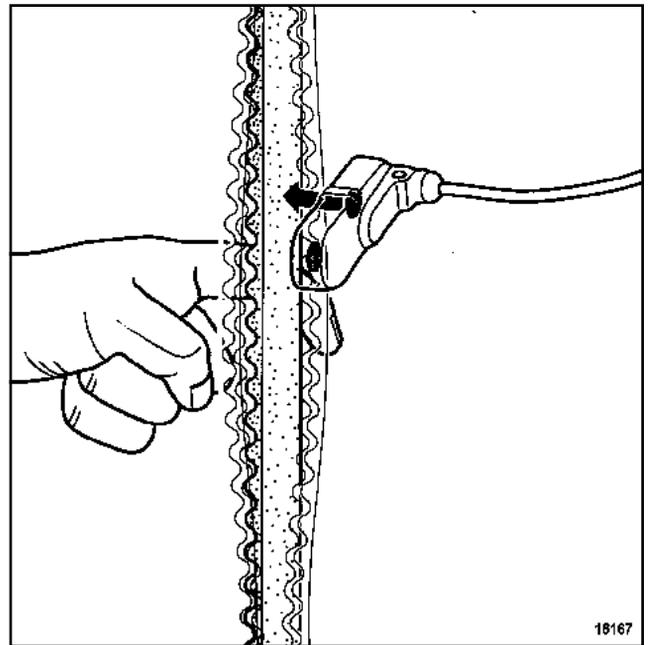


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The two sensors should not be facing the belt simultaneously during measurement.



16167

The measurement is made after setting the belt vibrating with a finger.

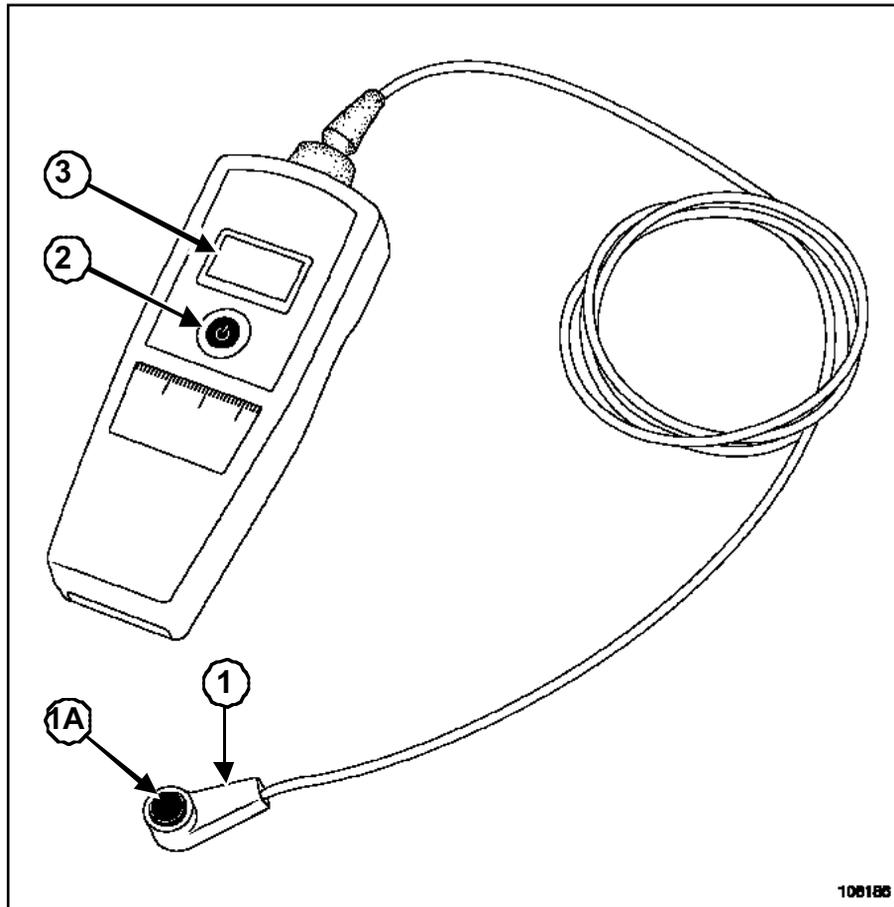
The measurement is validated by a bleep.

Belt tension tester:Use

DXX – KXX – FXX – GXX – SXX – PXX – VXX – ZXX – LXX

II - OPERATION OF TOOL MOT.1715

1 - Description

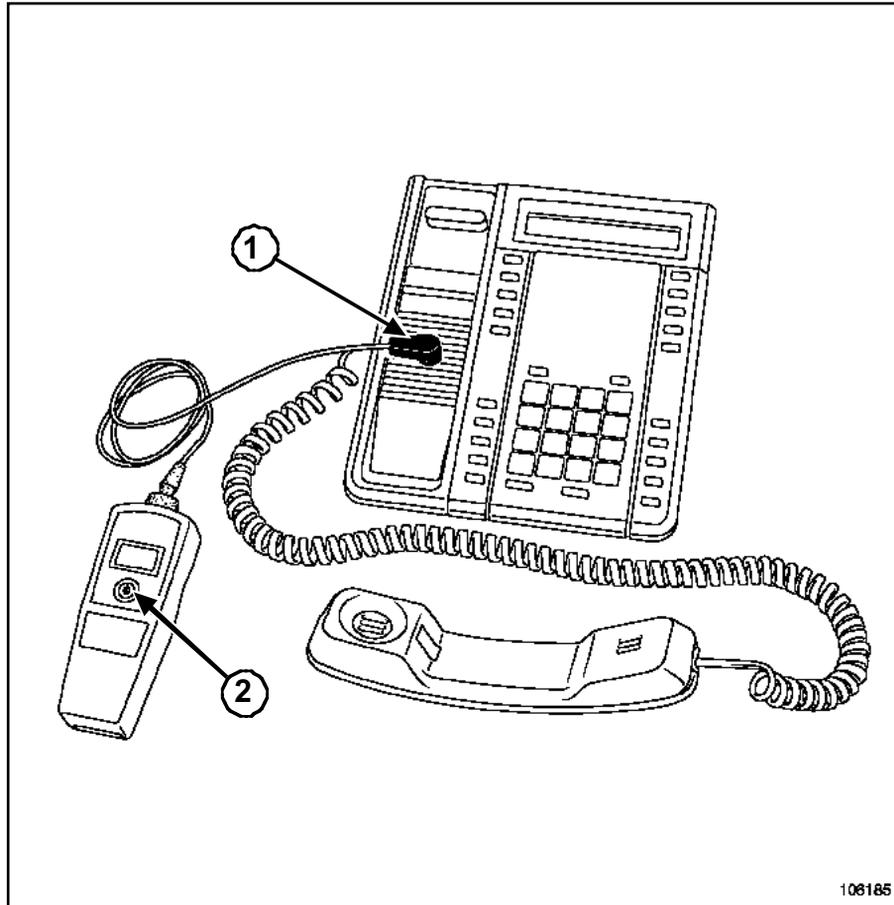


- (1) Reading head with a sensor (1A)
- (2) Device on/off switch
- (3) Display

DXX – KXX – FXX – GXX – SXX – PXX – VXX – ZXX – LXX

2 - Tool check

Checking calibration

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106185

This operation is used to check whether the tool is correctly calibrated.

The telephone tone has a precise frequency that acts as a calibration value.

Switch the tool on using switch (2).

Take the telephone receiver off the hook.

Dial the free number **+33 (0)4 92 12 06 54**, the call will never be picked up.

Turn the volume up as far as it will go.

Mount the sensor (1) on the external speaker.

Check whether the value obtained corresponds to **440 ± 2 Hz**.

If the value is outside the tolerance range, return the device to ONE-TOO.

ONE TOO

1 ZAC de Saint Esteve

06640 Saint-Jeannet les Plans

Tel: +33 (0)4 92 12 04 80

Fax: +33 (0)4 92 12 04 66

3 - Operating principle

This device measures the belt frequency.

Frequency is a physical unit which here reflects the belt tension level very accurately.

The unit employed is Hertz (**Hz**).

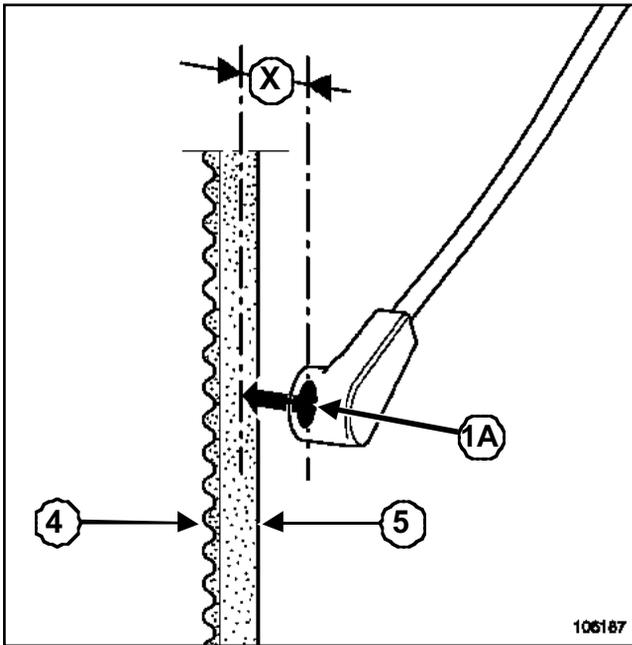
The reading head (1) comprises a sensor **1A**, which is used to measure the belt vibrations after a stimulus is applied.

Measuring range: **30 to 520 Hz**.

Uncertainty: **± 1 Hz < 100 Hz** and **± 1% >100 Hz**.

Belt tension tester:Use

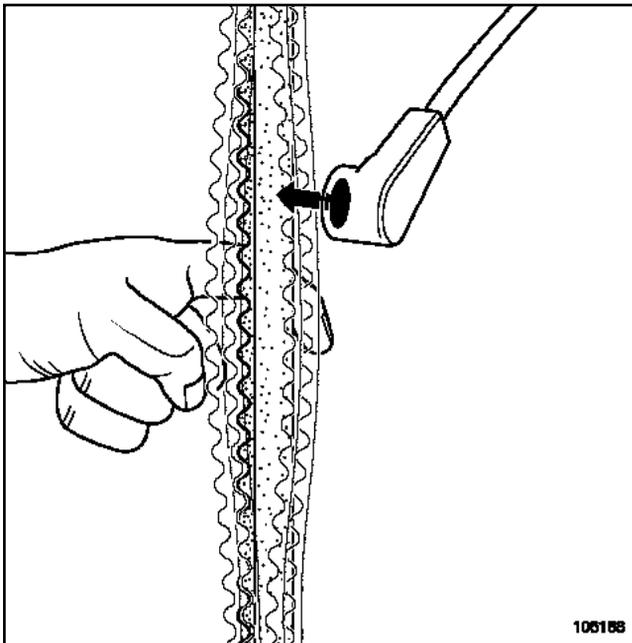
DXX - KXX - FXX - GXX - SXX - PXX - VXX - ZXX - LXX



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Position the reading head at a distance (X) of between around 5 and 10 mm inclusive from the belt.

The measurement can be made on either face (4) or (5) of the belt, according to the dimensions.



106188

Make the measurement after setting the belt vibrating with a finger.

Timing belt: Assembly instructions

DXX – FXX – GXX – KXX – LXX – PXX – SXX – VXX – ZXX

Essential special tooling		
Mot. 1135-01	KXX – DXX	Timing gear belt tensioner tool
Mot. 1386	KXX – DXX	Timing belt pretensioning tool
Mot. 1501	KXX – DXX	Timing belt prestressing tool
Mot. 1505	DXX – KXX	Belt tension setting tool (frequency meter)
Mot. 1715	DXX – KXX	Belt tension setting tool (frequency meter)
Mot. 1543		Tool for pre-stressing timing belt

There are three distinct tension procedures that must be observed, according to the engine family.

Some engines require:

- a pretensioning torque to be applied (using the special tooling for the engine type) to the belt section to be measured to compensate for all the belt play.
- a **pre-stress T1** slightly greater than the **final fitting tension T2** to be applied.

The purpose of these two operations is to stabilise the belt's internal voltage, to make a reliable tension measurement.

WARNING

Replace any removed belt.

WARNING

When replacing the timing belt specified by the manufacturer, the belt, tension wheel and pulley(s) must be replaced.

I - NO PRETENSIONING TORQUE

II - WITH PRETENSIONING TORQUE

DXX, and D7D or D7F – KXX, and K7M

Engine cold, ambient temperature.

Fit the new belt, with the timing at the setting point (Top Dead Centre).

Set the tension wheel tight against the belt using tool (Mot. 1135-01).

Stress the belt to obtain the recommended fitting tension.

Tighten the tension wheel.

Apply the pretensioning torque using tool (Mot. 1386) for the D7 engine and using tool (Mot. 1501) for the K7M engine, using a torque wrench set to a torque of **1 daNm**, to the belt section to be measured.

Measure the tension using tool (Mot. 1505) or (Mot. 1715).

Check whether it is within the fitting tension tolerance range, otherwise adjust it using tool (Mot. 1135-01).

Tighten the tension wheel.

Turn the crankshaft four revolutions and set the timing at Top Dead Centre.

Apply the pretensioning torque using tool (Mot. 1386) for the D7 engine and using tool (Mot. 1501) for the K7M engine, using a torque wrench set to a torque of **1 daNm**, to the belt section to be measured.

Check that the tension value is within the fitting tension tolerance range, otherwise readjust it by repeating the procedure.

Tighten the tension wheel nut to torque.

Timing belt: Assembly instructions

DXX – FXX – GXX – KXX – LXX – PXX – SXX – VXX – ZXX

III - WITH PRETENSIONING TORQUE AND PRE-STRESS

FXX, and F8Q or F9Q

Engine cold, ambient temperature.

Fit the new belt, with the timing at the setting point (Top Dead Centre).

Set the tension wheel tight against the belt by screwing a bolt into the lower timing cover.

Apply the pretensioning torque using tool (Mot. 1543) with its various covers, using a torque wrench set to a torque of **1.1 daNm**, to the belt section to be measured.

Measure the tension using tool (Mot. 1505) or (Mot. 1715), then adjust the tension using the screw on the tension wheel until the **pre-stress T1** value is obtained.

Tighten the tension wheel.

Turn the crankshaft four revolutions and set the timing at Top Dead Centre.

Apply the pretensioning torque using tool (Mot. 1543) with its various covers, using a torque wrench set to a torque of **1.1 daNm**, to the belt section to be measured.

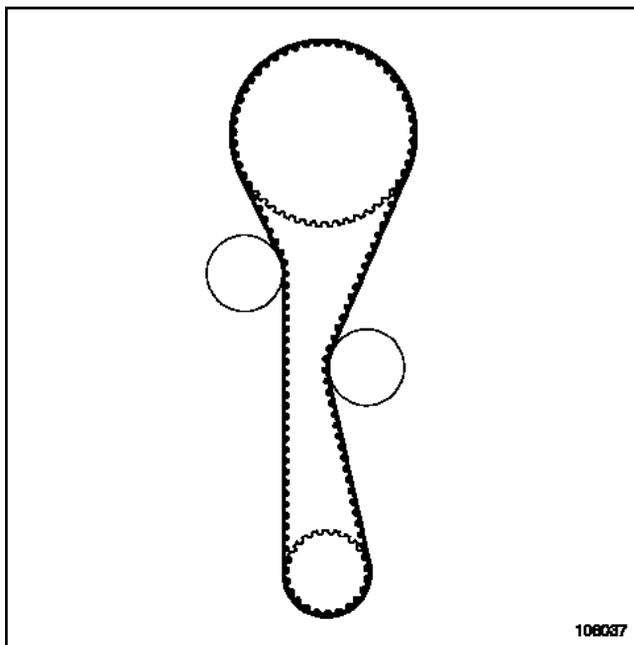
Measure the tension using tool (Mot. 1505) or (Mot. 1715), then adjust the tension using the bolt on the tension wheel until the **tension value T2** is obtained.

Timing belts: Tension values

DXX

D4D or D4F

Engine type	Fitting tension (Hertz)
D4D / D4F	AUTOMATIC TENSIONWHEEL

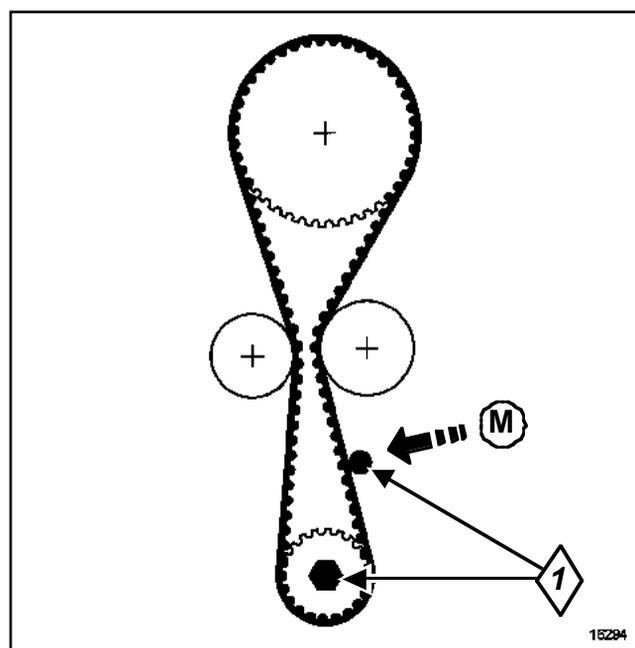


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D7D or D7F

Engine type	Fitting tension (Hertz)
D7D/D7F	145 ± 5



16294

16294

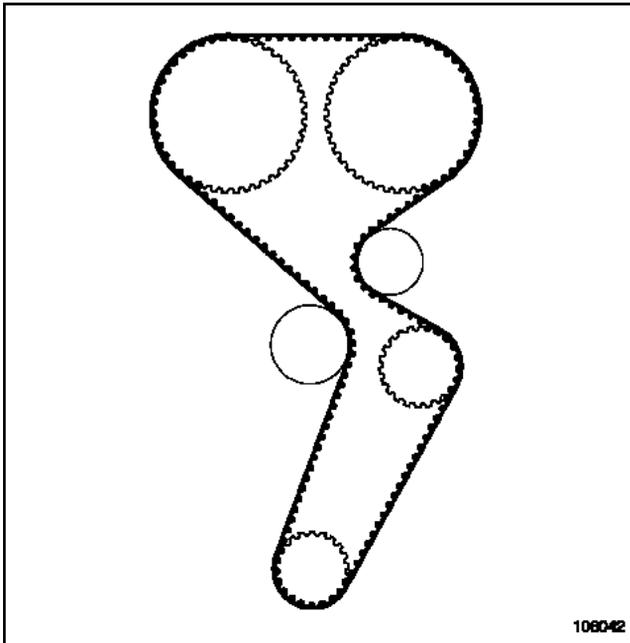
(1) Pretensioning torque tool (Mot. 1386)

(M) Measuring point

KXX

K4J or K4M

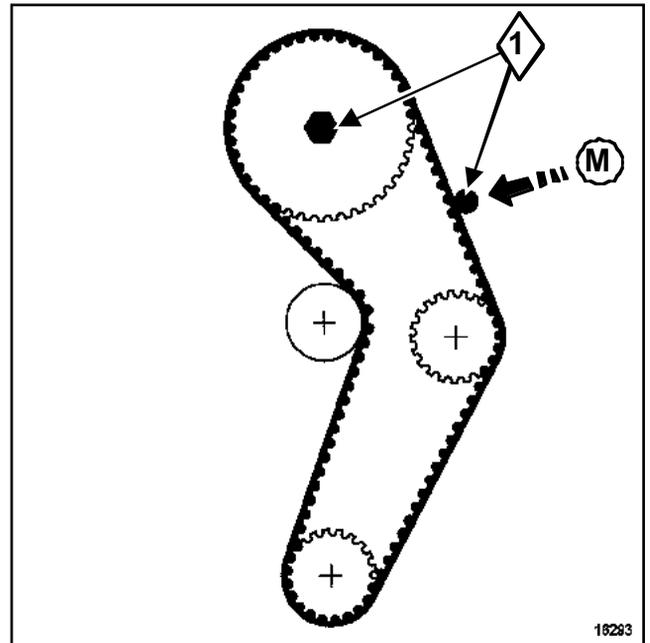
Engine type	Fitting tension (Hertz)
K4J / K4M	AUTOMATIC TENSIONWHEEL



106042
106042

K7J or K7M

Engine type	Fitting tension (Hertz)
K7M 702,703,790	144 ± 5
K7J / K7M 704,710,720,744,745,746	162 ± 5



16293
16293

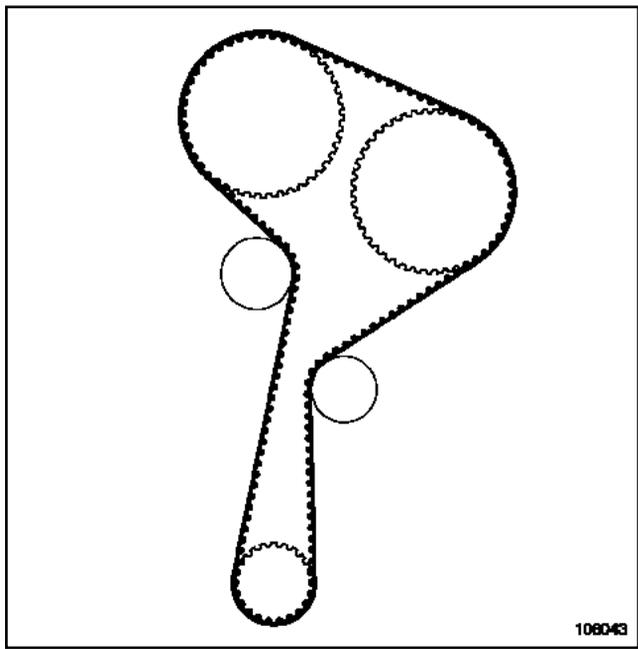
(1) Pretensioning torque tool (Mot. 1501)

(M) Measuring point

K9K

Engine type	Fitting tension (Hertz)
K9K	AUTOMATIC TENSIONWHEEL

KXX



106043

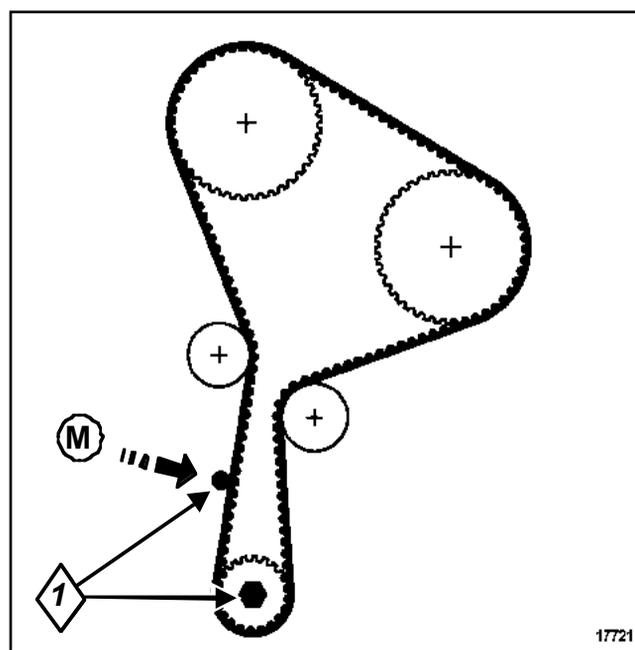
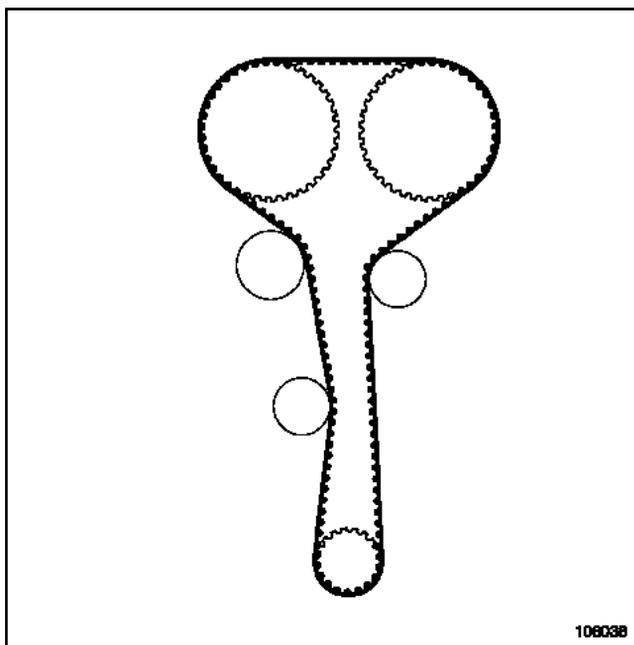
106043

Timing belts: Tension values

FXX

F4P or F4R or F5R

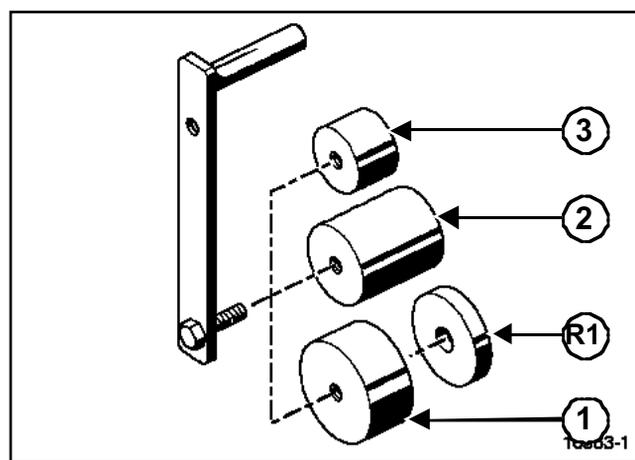
Engine type	Fitting tension (Hertz)
F4P / F4R / F5R	AUTOMATIC TENSIONWHEEL



(1) Pretensioning torque tool (Mot. 1543)

(M) Measuring point

Mot. 1543



F9Q

Engine type	Fitting tension (Hertz)
F9Q 650,718,750,751, 752,754,760,762,772, 774,800,820,826	T1 = 95 ± 3 T2 = 90 ± 3
F9Q 260,660,757,758, 759,800,804,808,812	T1 = 90 ± 15 T2 = 80 ± 15

Timing belts: Tension values

FXX

Note:

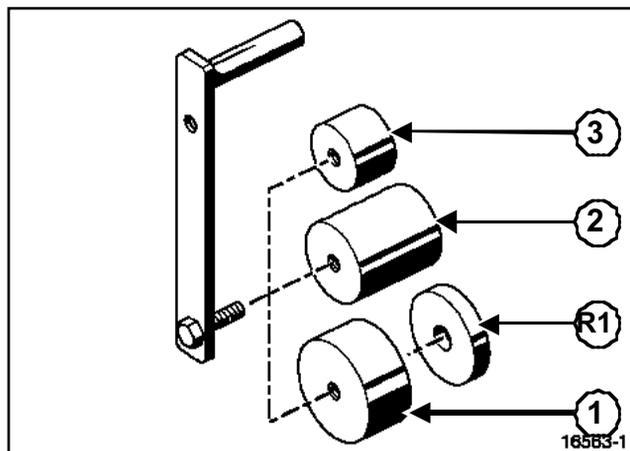
Use the cover according to the type of support washer.

- (Mot. 1543) + Cover (1) + Washer (R1) for crankshaft bolts without washers.

- (Mot. 1543) + Cover (1) for crankshaft bolts with washers.

- (Mot. 1543) + Cover (Mot.1705) if the support washer has a larger external diameter.

Mot. 1543



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F8Q or F9Q

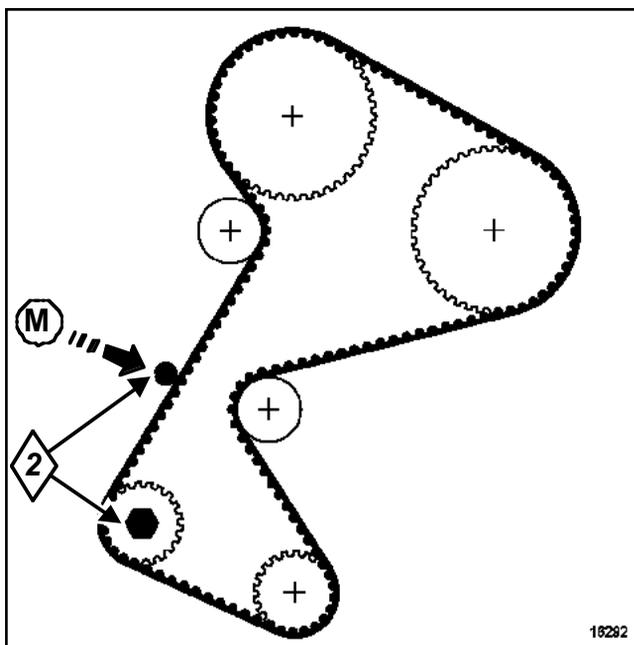
Engine type	Fitting tension (Hertz)
F9Q 710,717,722,731,736,744,770,780,782	AUTOMATIC TENSION WHEEL
F8Q/F9Q	T1 = 68 ± 3 T2 = 61 ± 5

Note:

Use the cover according to the type of intermediate shaft sprocket.

- (Mot. 1543) + Cover (2).

- (Mot. 1543) + Cover (3).



16292

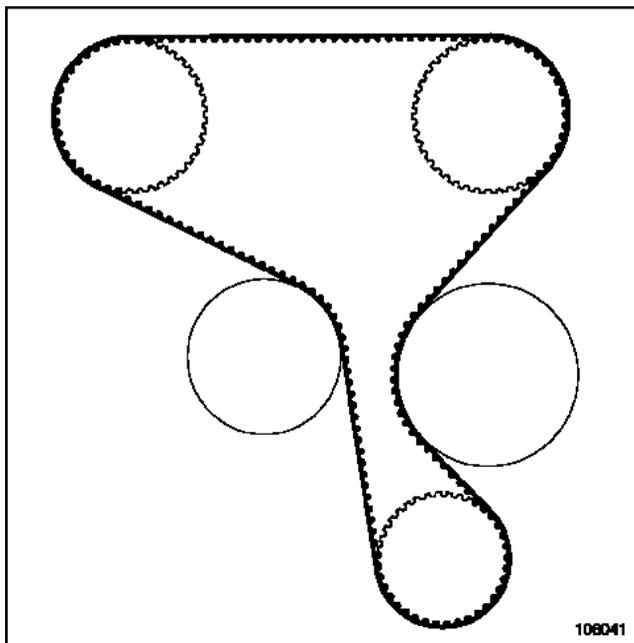
(2) Pretensioning torque tool (Mot. 1543)

(M) Measuring point

Timing belts: Tension values

GXX

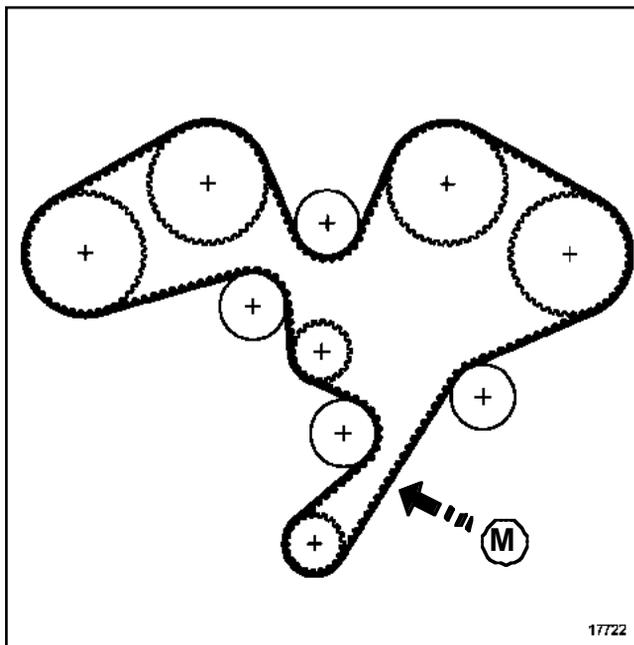
Engine type	Fitting tension (Hertz)
G9T / G9U	AUTOMATIC TENSIONWHEEL



106041

LXX

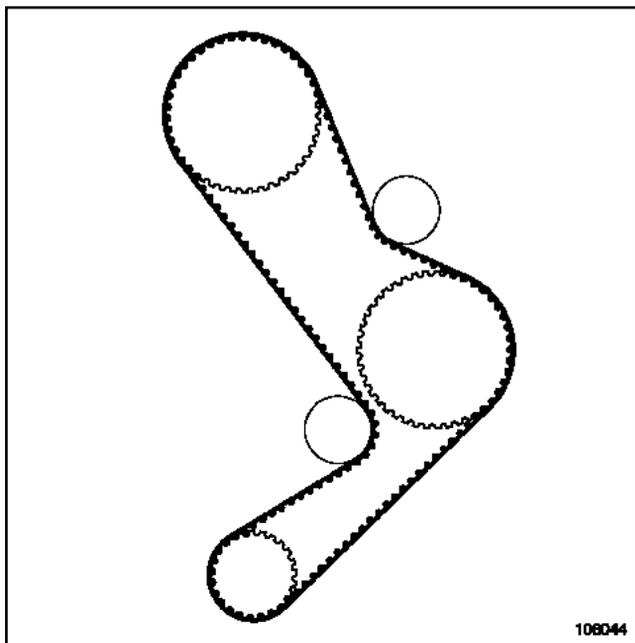
Engine type	Fitting tension (Hertz)
L7X	106 ± 4



(M) Measuring point

SXX

Engine type	Fitting tension (Hertz)
S8W / S9W	AUTOMATIC TENSIONWHEEL



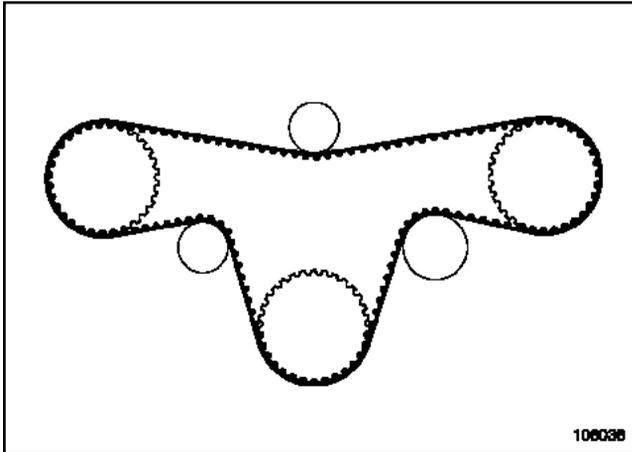
106044

106044

Timing belts: Tension values

PXX

Engine type	Fitting tension (Hertz)
P9X	AUTOMATIC TENSIONWHEEL



106036

ENGINE AND LOWER ENGINE ASSEMBLY

Accessories belt: Assembly instructions

10A

DXX – FXX – GXX – KXX – LXX – PXX – SXX – VXX – ZXX

Essential special tooling

Mot. 1505	Belt tension setting tool (frequency meter)
Mot. 1715	Belt tension setting tool (frequency meter)

I - GENERAL RULES

WARNING

Replace any removed belt.

WARNING

When replacing the accessories belt recommended by the manufacturer, be sure to replace the belt, the tension wheel and the idler pulley.

II - V BELT

SXX

1 - New belt tensioning process

Engine cold, ambient temperature.

Fit the new belt.

Set the tension wheel tight against the belt and stress it to obtain the recommended fitting tension.

Lock the tension wheel.

Turn the crankshaft through three revolutions.

Check the tension using tool (Mot. 1505) or (Mot. 1715).

Check whether it is within the fitting tension tolerance range; if not readjust it.

2 - Used belt tensioning process

Engine cold, ambient temperature.

Fit the belt.

Set the tension wheel tight against the belt and stress to obtain **80%** of the recommended fitting tension value.

Tighten the tension wheel.

Turn the crankshaft through three revolutions.

Check the tension using tool (Mot. 1505) or (Mot. 1715).

Check whether it is within the tolerance range of **80%** of the fitting tension value; if not readjust it.

Note: the V belt should be replaced according to the condition or the noise produced.

III - RIBBED BELT

Belt tensioning process

Engine cold, ambient temperature.

Fit the new belt.

Set the tension wheel tight against the belt and stress it to obtain the recommended fitting tension.

Lock the tension wheel.

Turn the crankshaft through three revolutions.

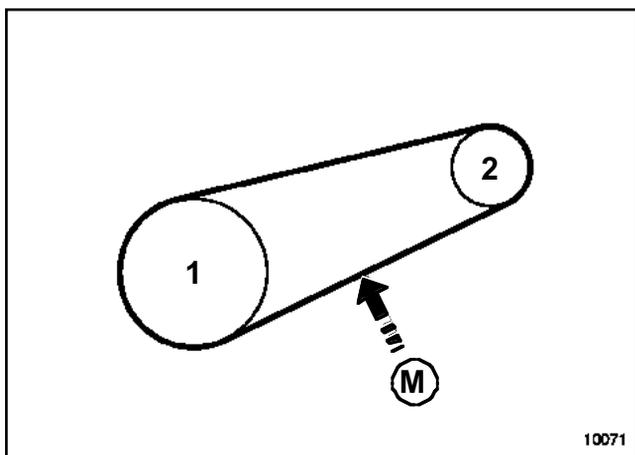
Check the tension using tool (Mot. 1505) or (Mot. 1715).

Check whether it is within the fitting tension tolerance range; if not readjust it.

DXX

4-toothed ribbed belt

Engine type	Fitting tension (Hertz)	Belt function
D4D / D4F	260 ± 5	Alternator
D7D / D7F	244 ± 5	

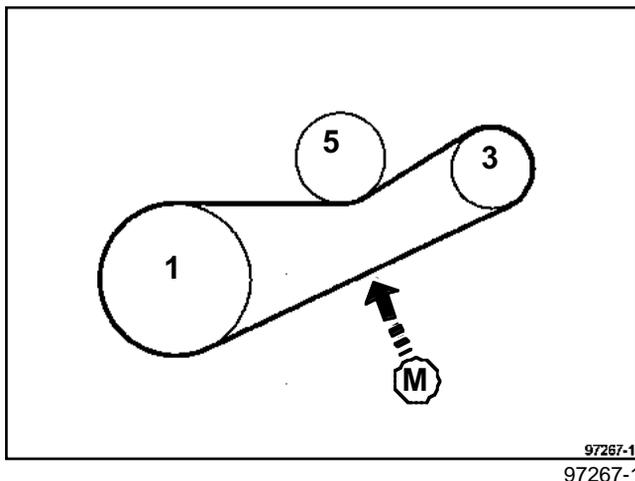


- (1) Crankshaft
- (2) Alternator
- (M) Measuring point

D4D or D4F or D7F

5-toothed ribbed belt

Engine type	Fitting tension (Hertz)	Belt function
D4D / D4F	210 ± 5	Power assisted steering pump
D7F	177 ± 5	

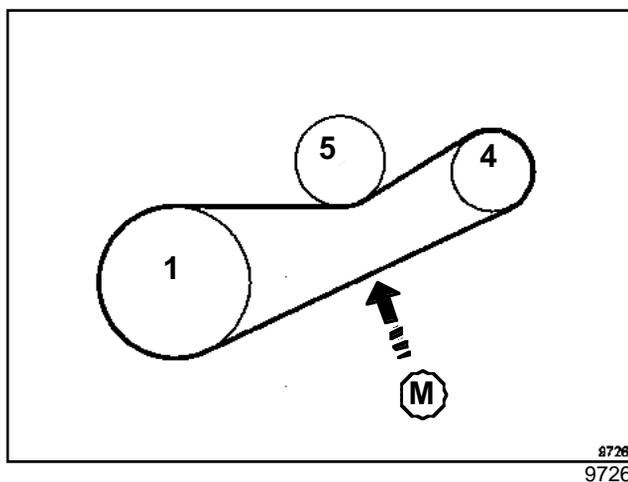


97267-1
97267-1

- (1) Crankshaft
- (3) Power assisted steering pump
- (5) Tension wheel
- (M) Measuring point

5-toothed ribbed belt

Engine type	Fitting tension (Hertz)	Belt function
D4D / D4F	210 ± 5	Air conditioning compressor
D7D / D7F	191 ± 5	



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97267

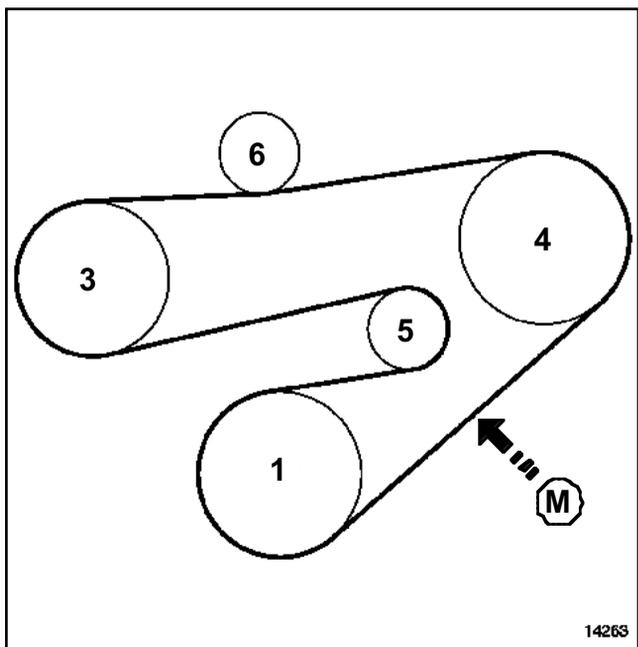
- (1) Crankshaft
- (4) Air conditioning compressor
- (5) Tension wheel
- (M) Measuring point

D4D or D4F or D7F

5-toothed ribbed belt

Engine type	Fitting tension (Hertz)	Belt function
D4D / D4F	210 ± 5	Power assisted steering pump / Air conditioning compressor
D7F	180 ± 5	

DXX



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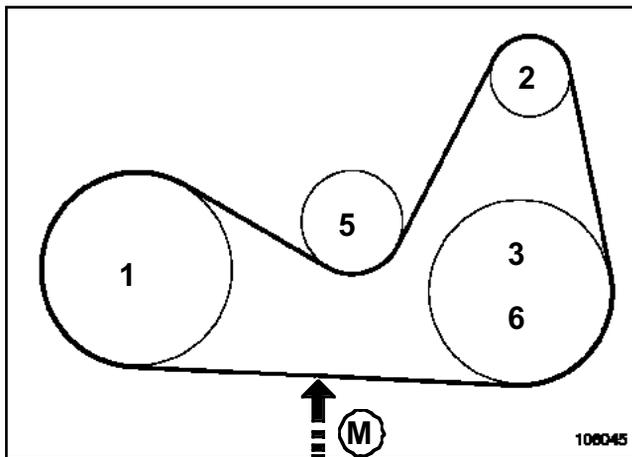
- (1) Crankshaft
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley
- (M) Measuring point

KXX

K4J or K4M or K7J or K7M

5-toothed ribbed belt

Engine type	Fitting tension (Hertz)	Belt function
K4J / K4M	204 ± 5	Alternator / Power assisted steering pump or Idler pulley
K7J / K7M	189 ± 5	

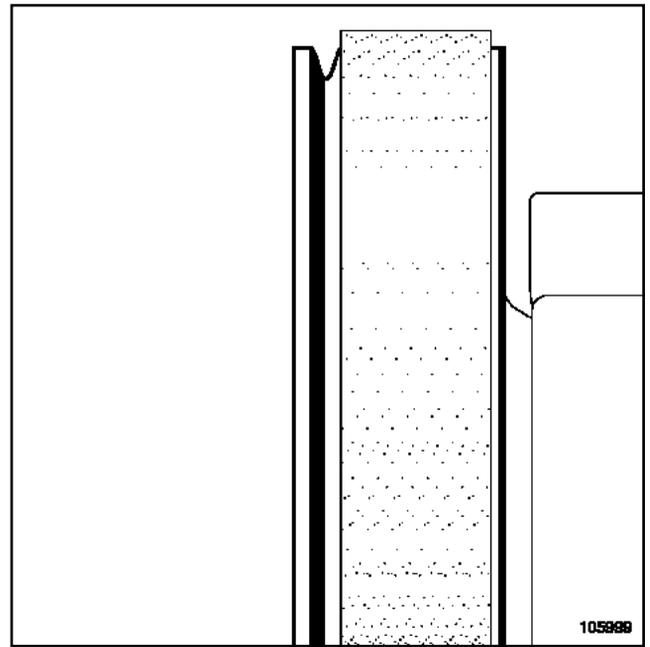


- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (5) Tension wheel
- (6) Idler pulley
- (M) Measuring point

WARNING

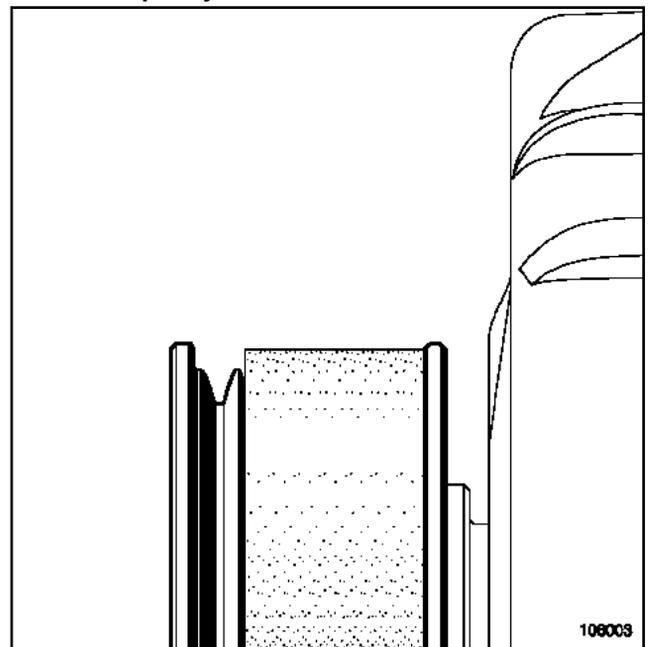
Observe the belt positioning on the various pulleys.
Check that all the external teeth are free.

Crankshaft pulley



105999

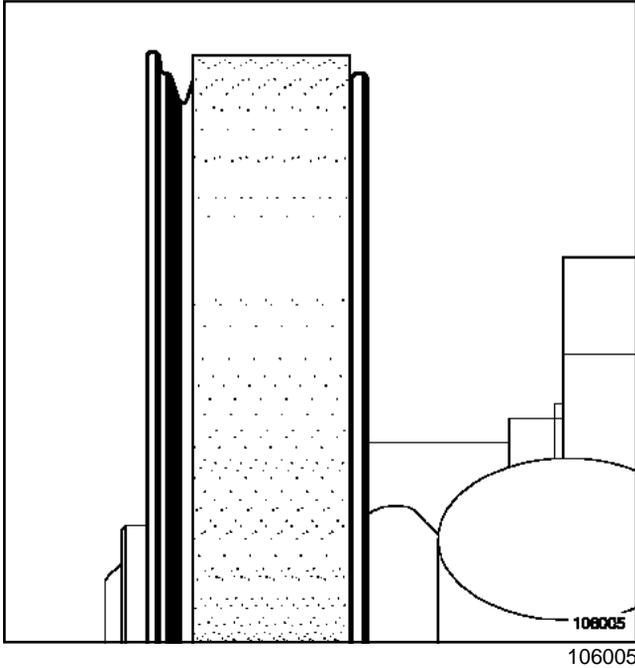
Alternator pulley



106003

KXX

Power assisted steering pump pulley or idler pulley

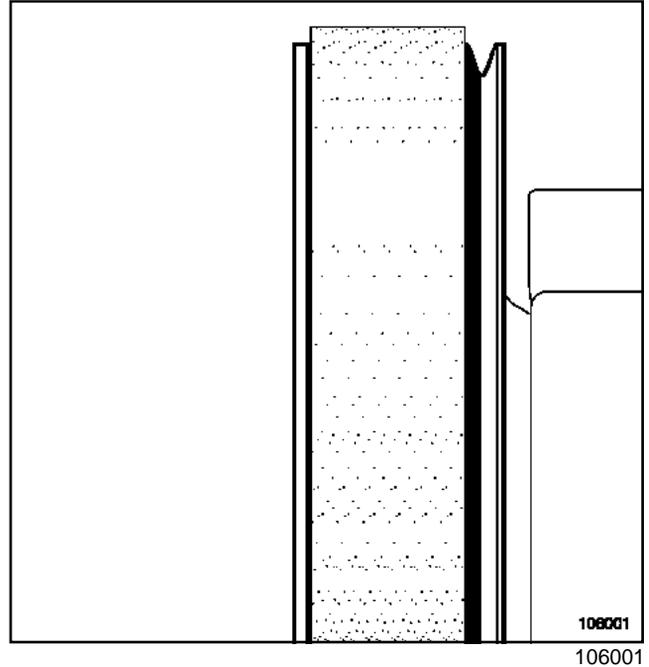


(M) Measuring point

WARNING

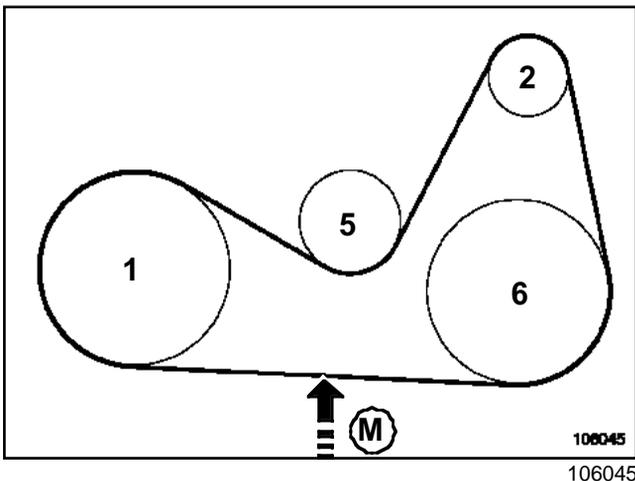
Observe the belt positioning on the various pulleys.
Check that the idler pulley wheel internal tooth is free.

Idler pulley wheel



K4J or K4M or K9K

Engine type	Belt function	Fitting tension (Hertz)
K4J 730,732 / K4M 760,761, 764,782 / K9K	Alternator	234 ± 5

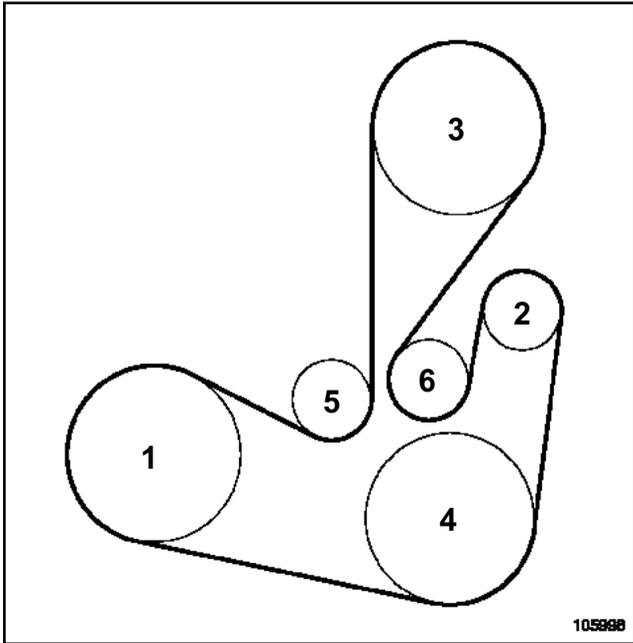


- (1) Crankshaft
- (2) Alternator
- (5) Tension wheel
- (6) Idler pulley

K4J or K4M or K7J or K7M

Engine type	Belt function	Fitting tension (Hertz)
K4J / K4M / K7J / K7M	Alternator / Air conditioning compressor / Power assisted steering pump	AUTOMATIC TENSION WHEEL

KXX



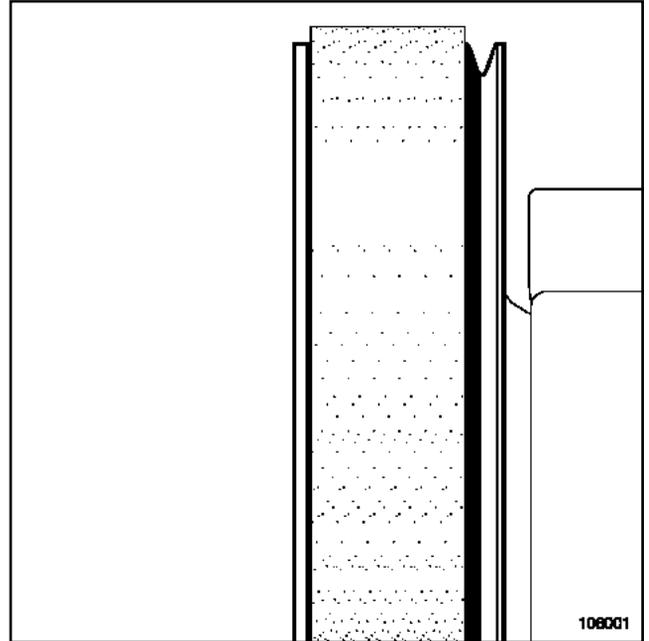
105998

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley

WARNING

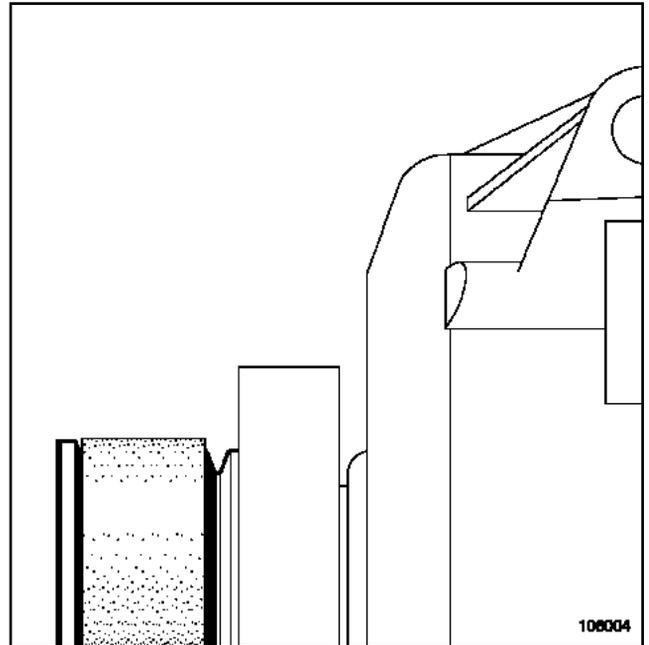
Observe the belt positioning on the various pulleys.
Check that all the internal teeth are free.

Crankshaft pulley



106001

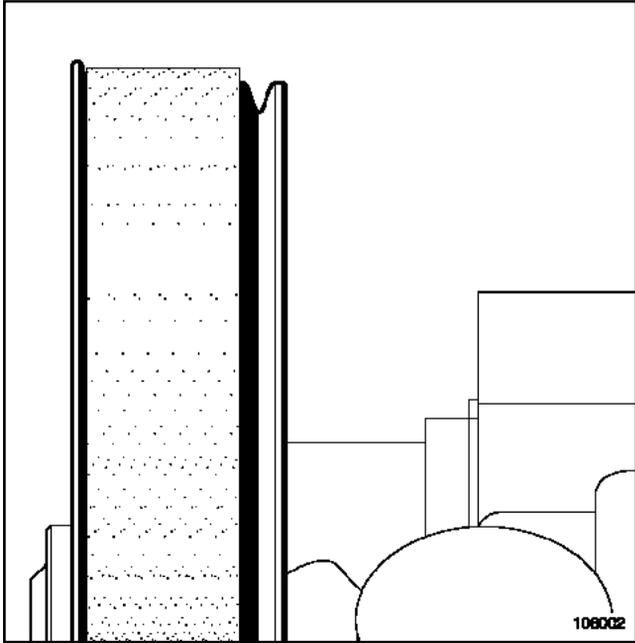
Alternator pulley



106004

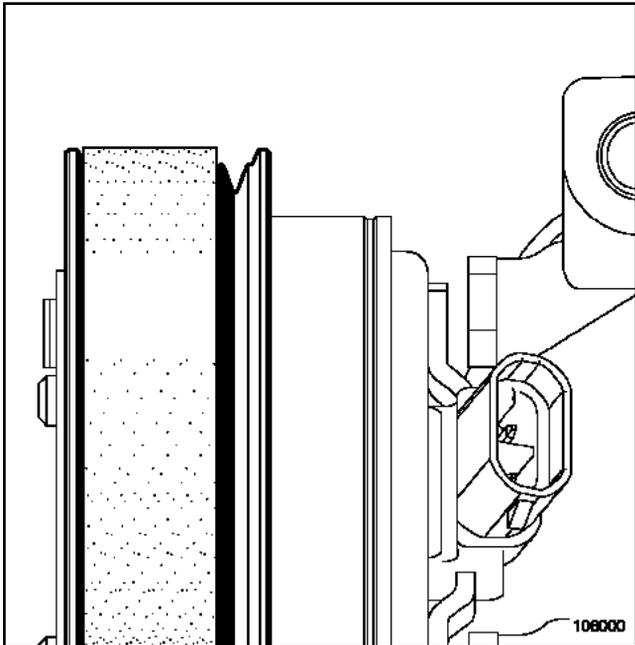
KXX

Power assisted steering pump pulley



106002

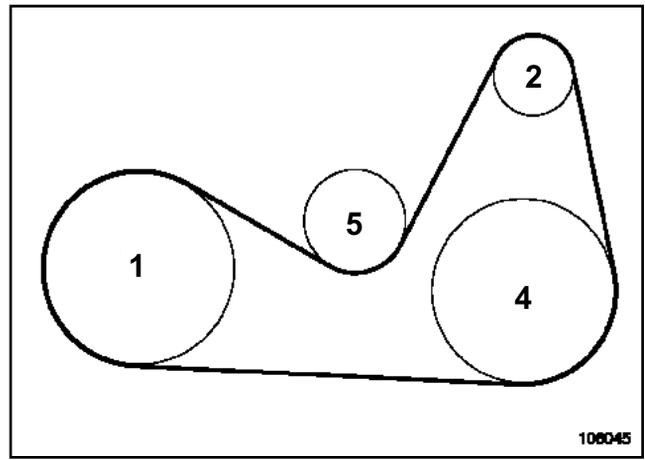
Air conditioning compressor pulley



106000

K4J or K4M or K9K

Engine type	Belt function	Fitting tension (Hertz)
K4J 730,732 / K4M 760,761, 764,782 / K9K	Alternator / Air conditioning compressor	AUTOMATIC TENSION WHEEL



106045

106045

- (1) Crankshaft
- (2) Alternator
- (4) Air conditioning compressor
- (5) Tension wheel

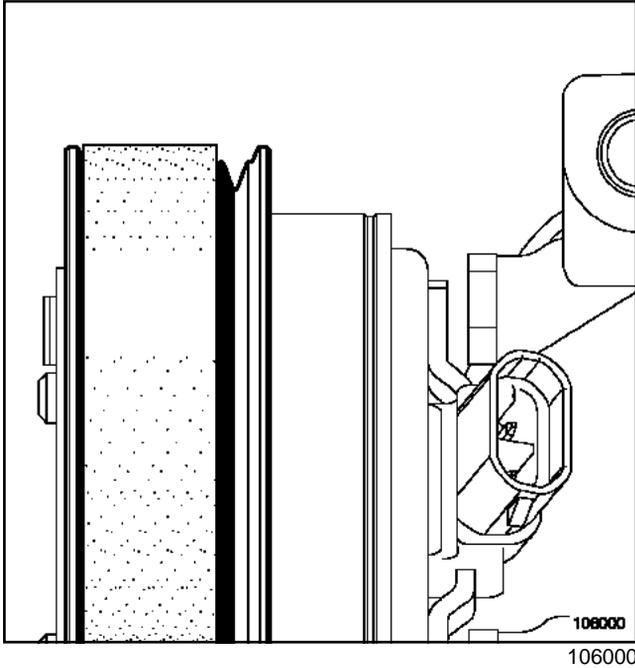
WARNING

Observe the belt positioning on the various pulleys.

Check that the air conditioning compressor pulley internal tooth is free.

KXX

Air conditioning compressor pulley



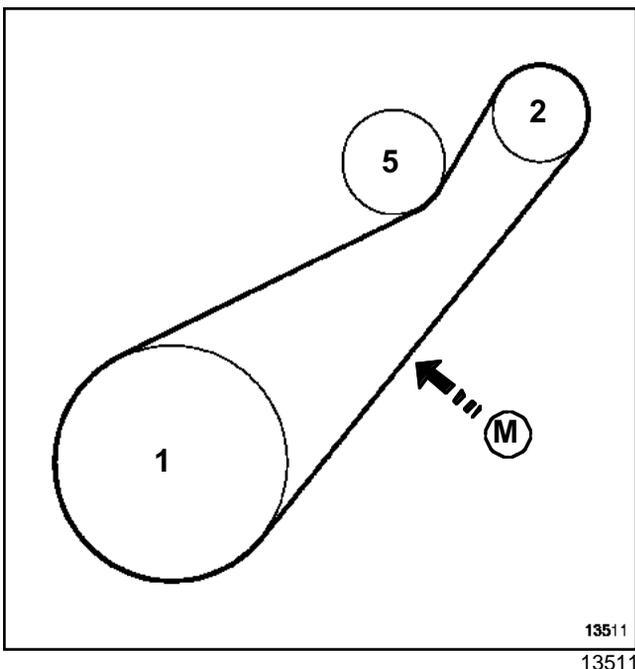
- (2) Alternator
- (5) Tension wheel
- (M) Measuring point

K7M

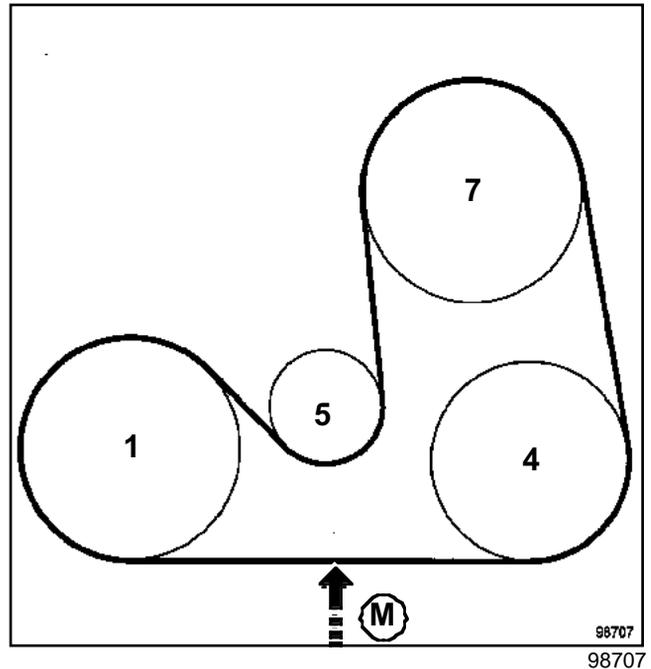
Engine type	Fitting tension (Hertz)	Belt function
K7M 744, 745	AUTOMATIC TENSION WHEEL	Air conditioning compressor / Servo pump
K7M 702, 703, 720, 790	182 ± 5	

K7M

Engine type	Belt function	Fitting tension (Hertz)
K7M	Alternator	153 ± 5



- (1) Crankshaft

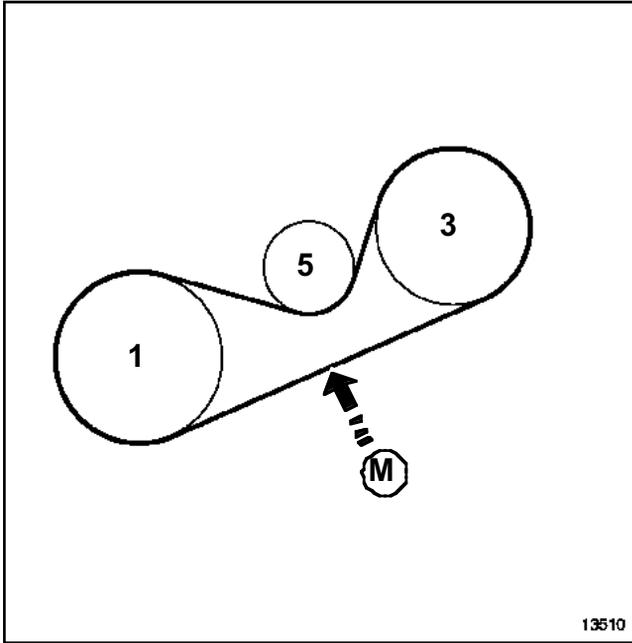


- (1) Crankshaft
- (4) Air conditioning compressor
- (5) Tension wheel
- (7) Servo pump
- (M) Measuring point

KXX

K7M

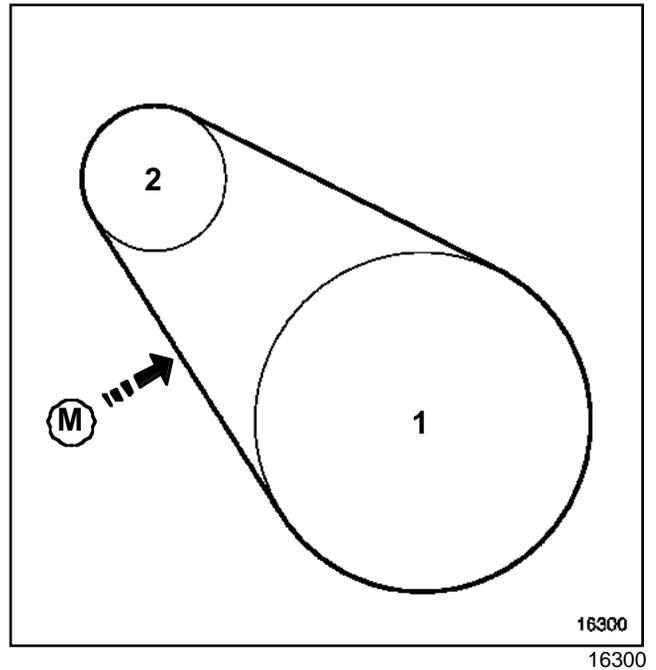
Engine type	Belt function	Fitting tension (Hertz)
K7M	Power assisted steering pump	178 ± 5



- (1) Crankshaft
- (3) Power assisted steering pump
- (5) Tension wheel
- (M) Measuring point

K7M

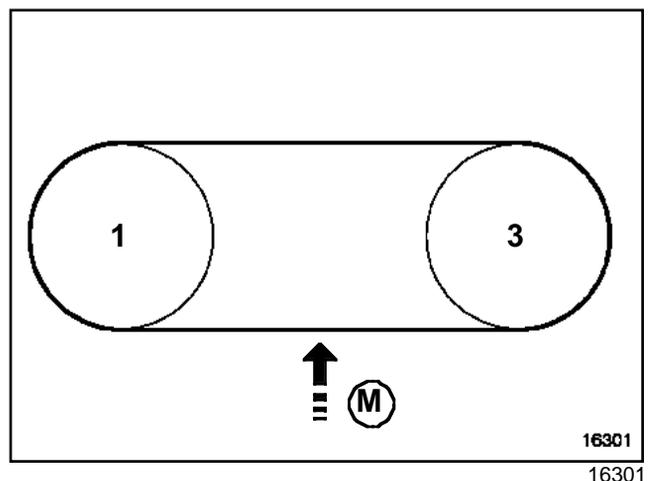
Engine type	Belt function	Fitting tension (Hertz)
K7M	Alternator	254 ± 5



- (1) Crankshaft
- (2) Alternator
- (M) Measuring point

K7M

Engine type	Belt function	Fitting tension (Hertz)
K7M	Power assisted steering pump	190 ± 5



- (1) Crankshaft

KXX

(3) Power assisted steering pump

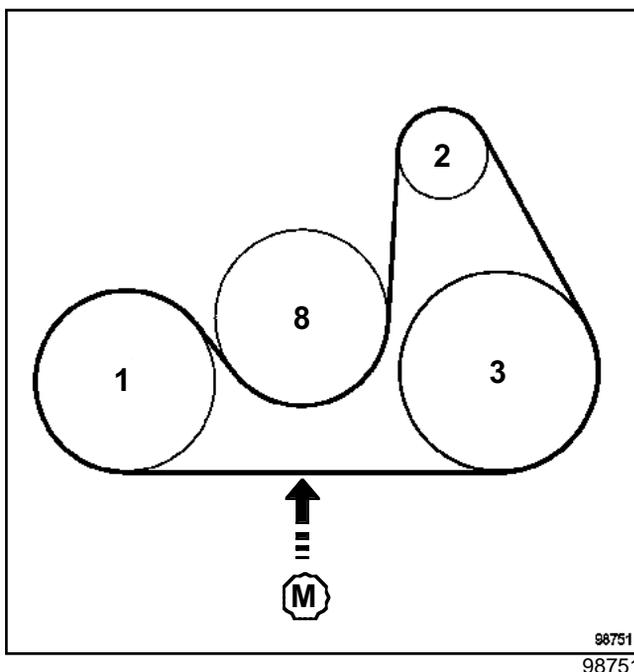
(M) Measuring point



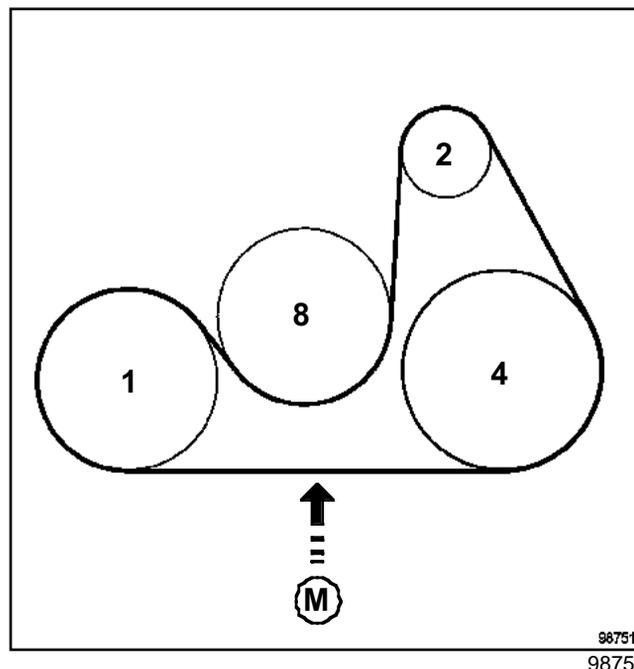
FXX

F4P or F4R or F8Q or F9Q

Engine type	Belt function	Fitting tension (Hertz)
F4P / F4R / F8Q / F9Q	Alternator / Power assisted steering pump / Water pump	188 ± 5



- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (8) Water pump
- (M) Measuring point



- (1) Crankshaft
- (2) Alternator
- (4) Air conditioning compressor
- (8) Water pump
- (M) Measuring point

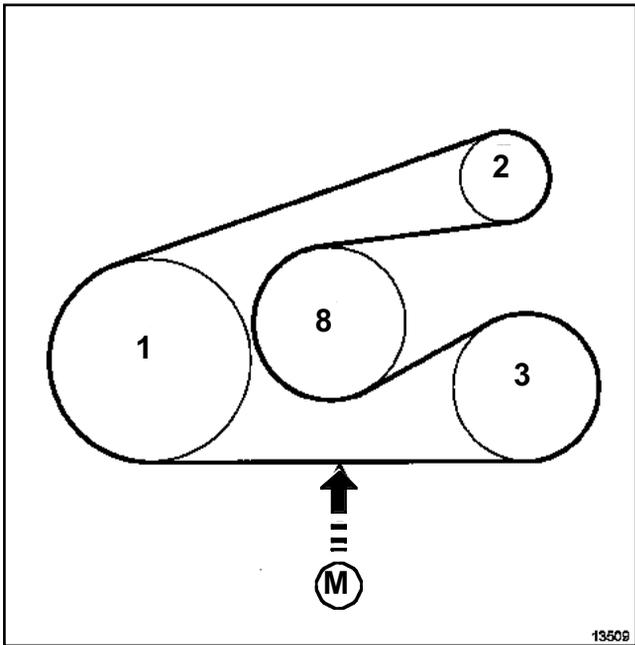
F8Q

Engine type	Belt function	Fitting tension (Hertz)
F8Q	Alternator / Power assisted steering pump / Water pump	166 ± 5

F8Q or F9Q

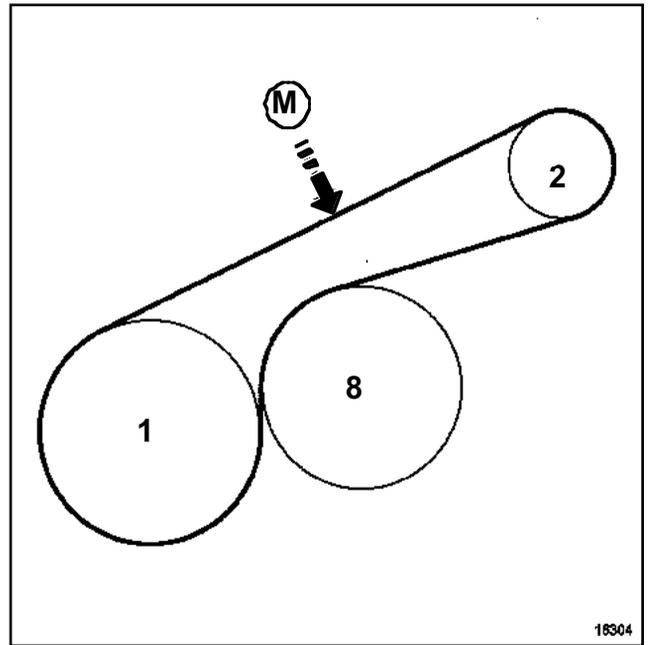
Engine type	Belt function	Fitting tension (Hertz)
F8Q/F9Q	Alternator / Air conditioning compressor / Water pump	188 ± 5

FXX



13509

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (8) Water pump
- (M) Measuring point



16304

- (1) Crankshaft
- (2) Alternator
- (8) Water pump
- (M) Measuring point

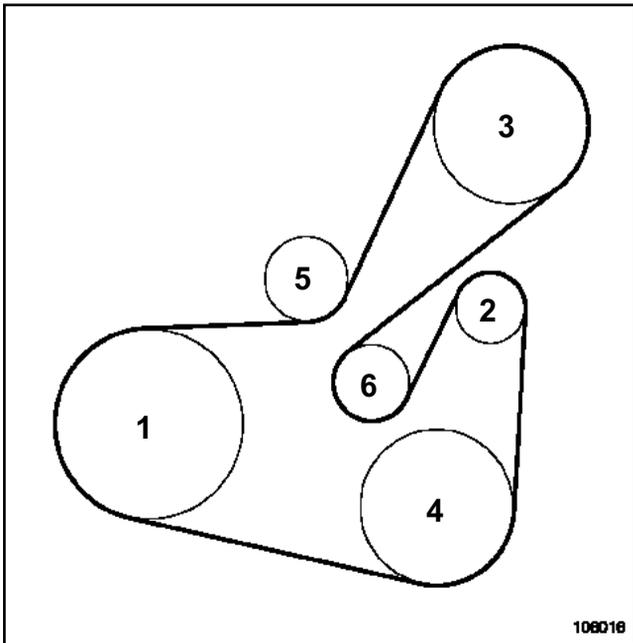
F8Q

Engine type	Belt function	Fitting tension (Hertz)
F8Q	Alternator / Water pump	165 ± 5

F4P or F4R or F5R or F9Q

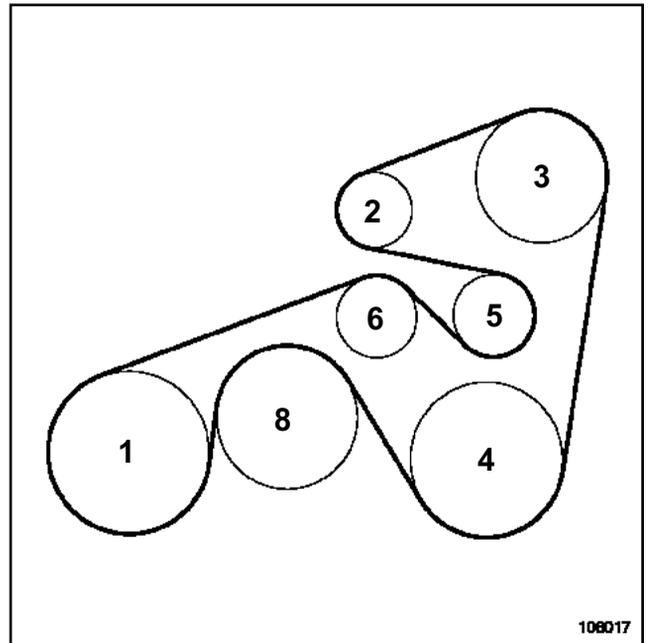
Engine type	Belt function	Fitting tension (Hertz)
F4P / F4R / F5R / F9Q	Alternator / Power assisted steering pump / Air conditioning compressor	AUTOMATIC TENSION WHEEL

FXX



106016
106016

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley



106017
106017

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley
- (8) Water pump

F4P or F4R or F5R

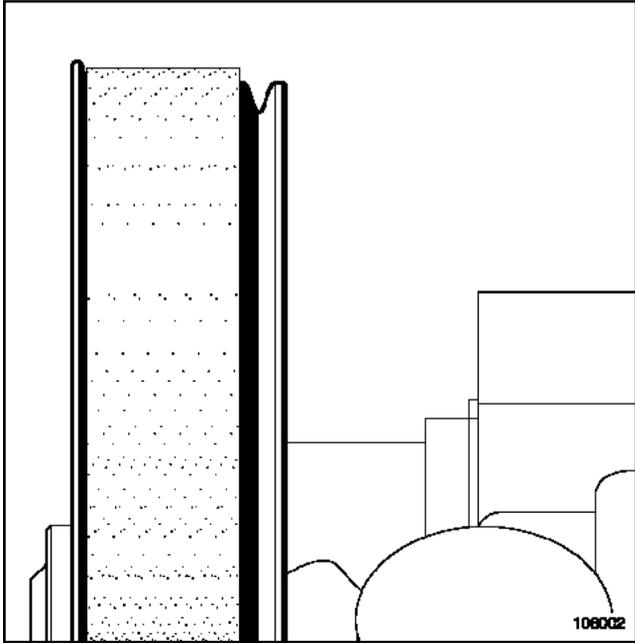
Engine type	Belt function	Fitting tension (Hertz)
F4P / F4R / F5R	Alternator / Power assisted steering pump / Air conditioning compressor / Water pump	AUTOMATIC TENSION WHEEL

WARNING

Observe the belt positioning on the various pulleys.
Check that the power assisted steering pump and air conditioning compressor pulley internal teeth are free.

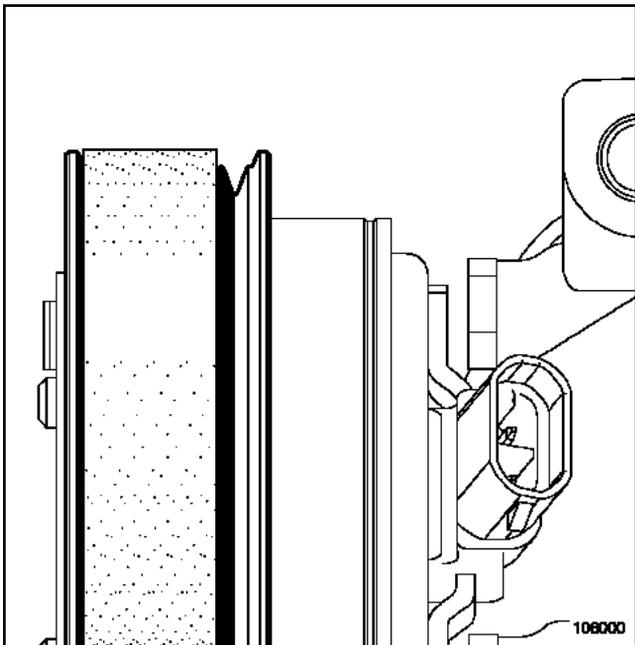
FXX

Power assisted steering pump pulley



106002

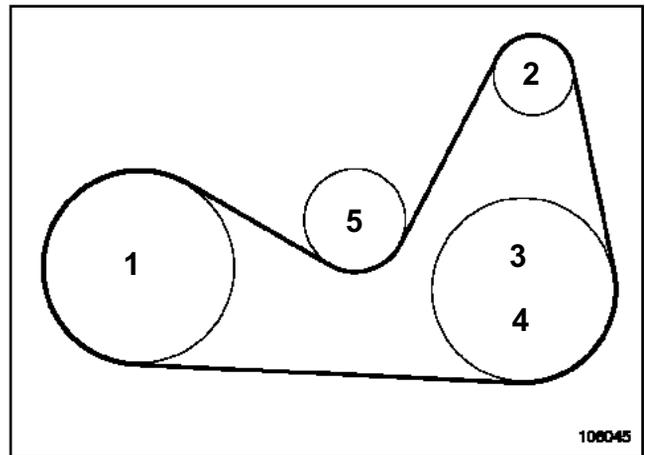
Air conditioning compressor pulley



106000

F4R or F9Q

Engine type	Belt function	Fitting tension (Hertz)
F4R	Alternator / Power assisted steering pump	AUTOMATIC TENSION WHEEL
F4R / F9Q	Alternator / Air conditioning compressor	



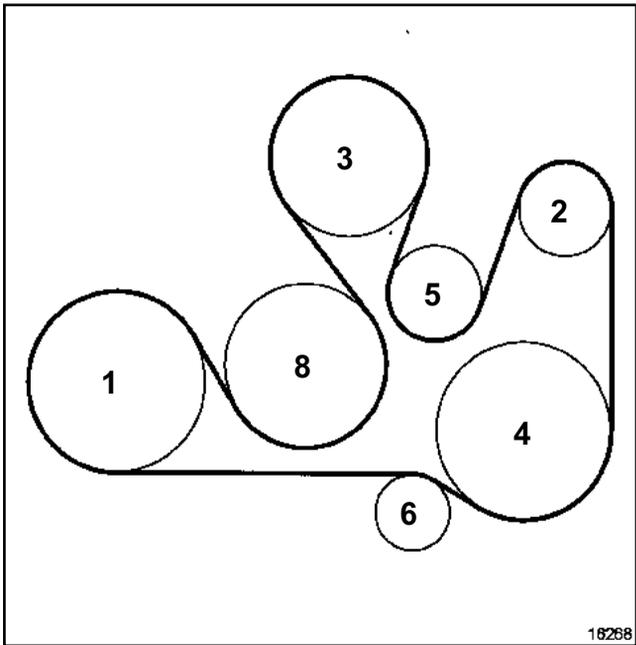
106045

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel

F4R

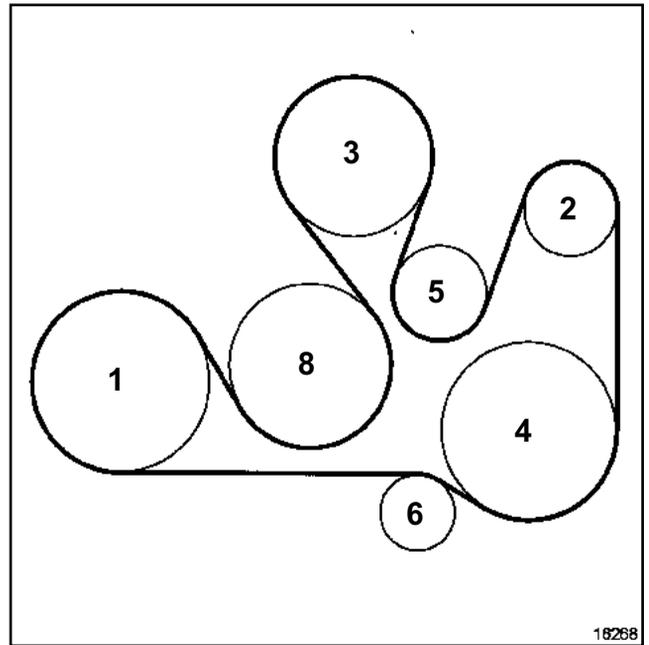
Engine type	Belt function	Fitting tension (Hertz)
F4R	Alternator / Power assisted steering pump / Air conditioning compressor / Water pump	AUTOMATIC TENSION WHEEL

FXX



16268
16268

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley
- (8) Water pump



16268
16268

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley
- (8) Water pump

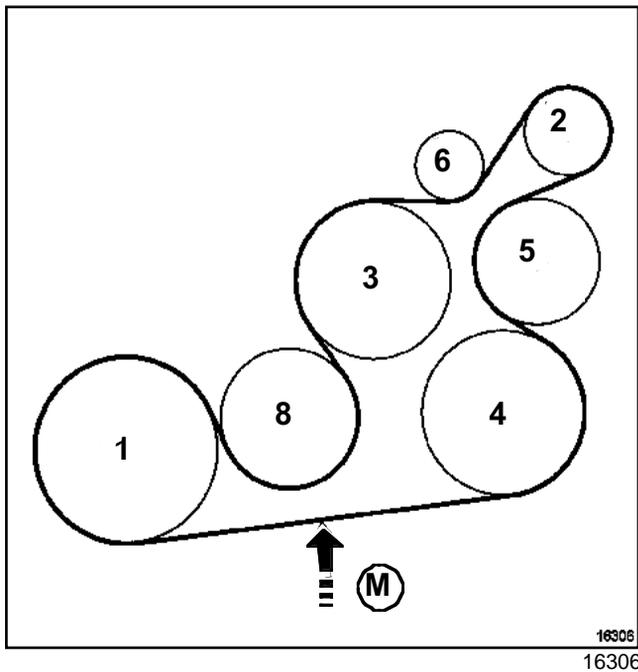
F8Q or F9Q

Engine type	Belt function	Fitting tension (Hertz)
F8Q/F9Q	Alternator / Power assisted steering pump / Air conditioning compressor / Water pump	AUTOMATIC TENSION WHEEL

F8Q

Engine type	Belt function	Fitting tension (Hertz)
F8Q	Alternator / Power assisted steering pump / Air conditioning compressor / Water pump	170 ± 5

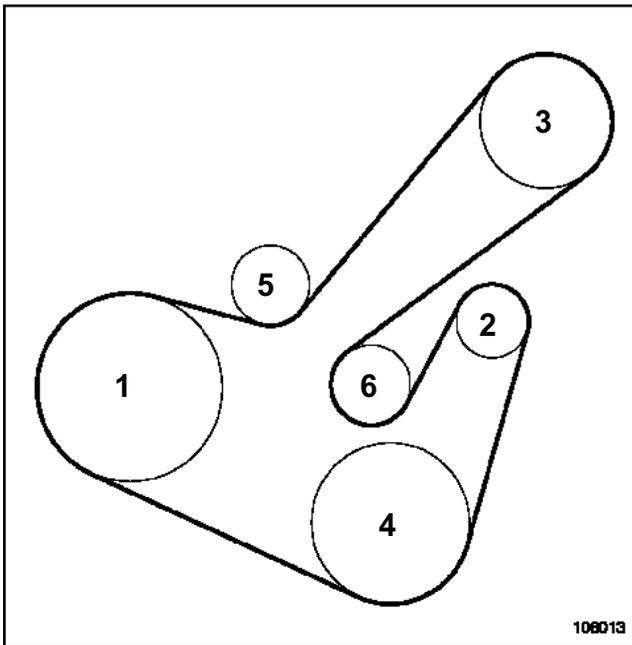
FXX



- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley
- (8) Water pump
- (M) Measuring point

GXX

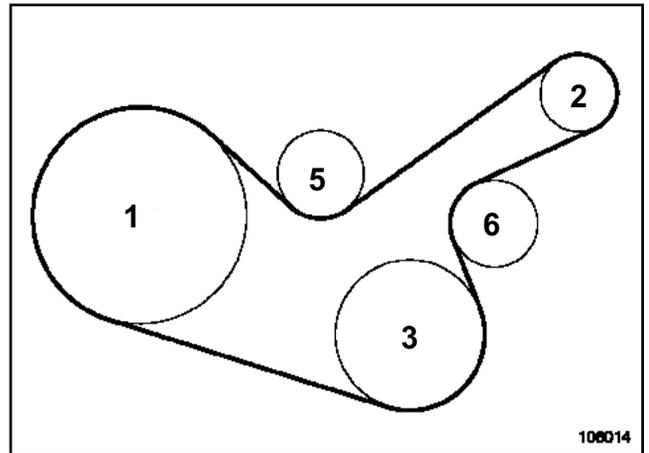
Engine type	Belt function	Fitting tension (Hertz)
G9T / G9U	Alternator / Power assisted steering pump / Air conditioning compressor	AUTOMATIC TENSION WHEEL



106013
106013

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley

Engine type	Belt function	Fitting tension (Hertz)
G9T / G9U	Alternator / Power assisted steering pump	AUTOMATIC TENSION WHEEL

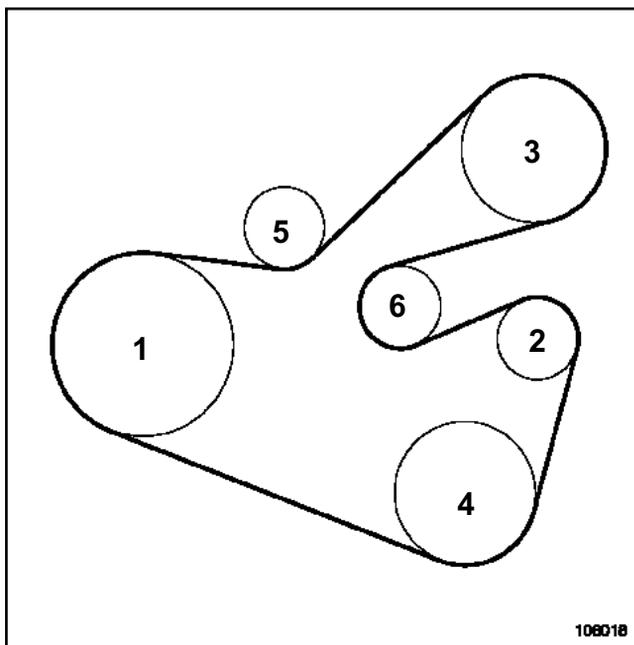


106014
106014

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (5) Tension wheel
- (6) Idler pulley

LXX

Engine type	Belt function	Fitting tension (Hertz)
L7X	Alternator / Power assisted steering pump / Air conditioning compressor	AUTOMATIC TENSION WHEEL

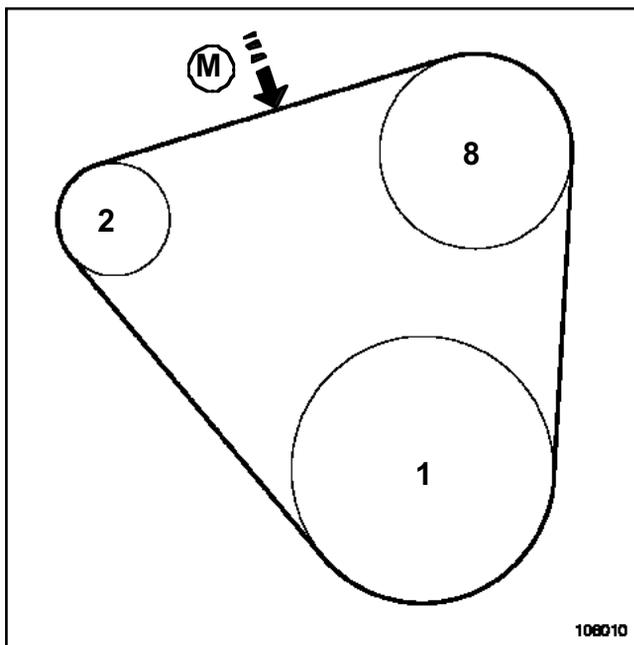


106018

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley

SXX

Engine type	Belt function	Fitting tension (Hertz)
S8W / S9W	Alternator / Water pump	289 ± 5

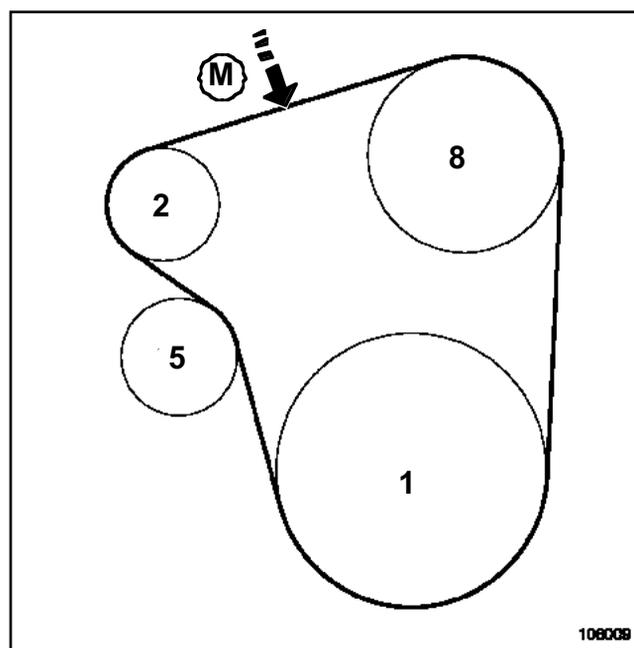


106010
106010

- (1) Crankshaft
- (2) Alternator
- (8) Water pump
- (M) Measuring point

S9W

Engine type	Belt function	Fitting tension (Hertz)
S9W	Alternator / Water pump	330 ± 5



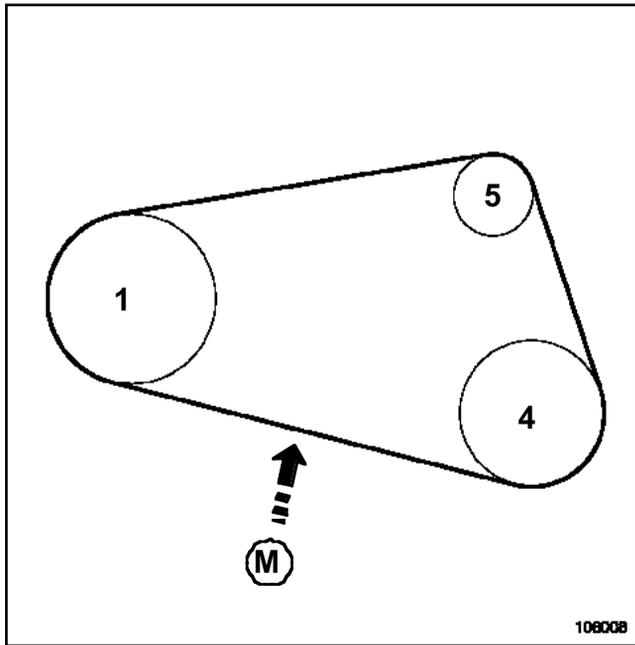
106009
106009

- (1) Crankshaft
- (2) Alternator
- (5) Tension wheel
- (8) Water pump
- (M) Measuring point

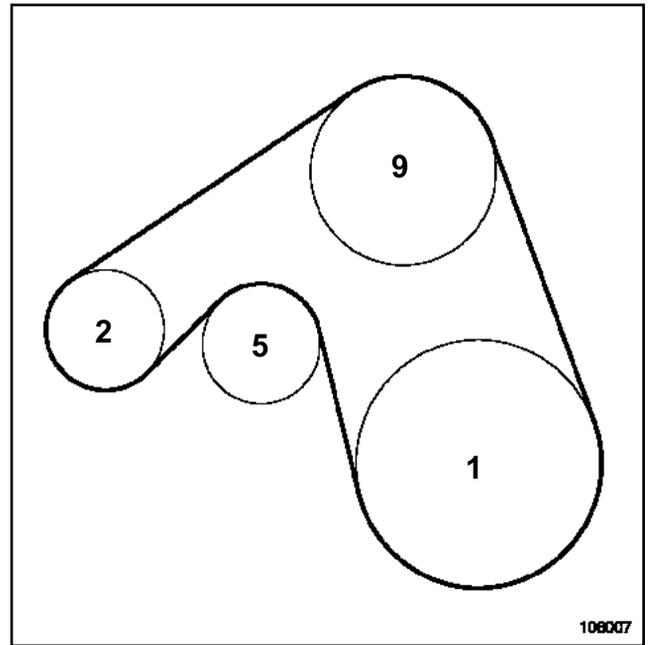
S9W

Engine type	Belt function	Fitting tension (Hertz)
S9W	Air conditioning compressor	130 ± 5

SXX



- (1) Crankshaft
- (4) Air conditioning compressor
- (5) Tension wheel
- (M) Measuring point



- (1) Crankshaft
- (2) Alternator
- (5) Tension wheel
- (9) Engine cooling fan

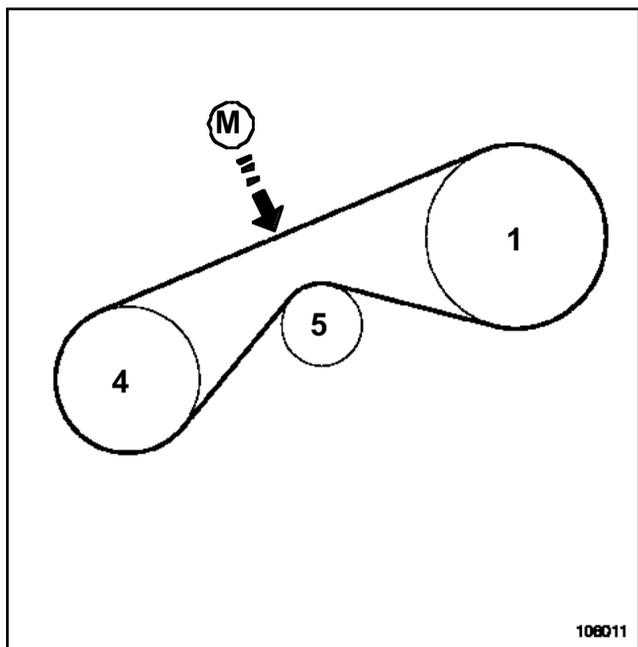
S9W

Engine type	Belt function	Fitting tension (Hertz)
S9W	Alternator / Engine cooling fan	AUTOMATIC TENSION WHEEL

S9W

Engine type	Belt function	Fitting tension (Hertz)
S9W	Air conditioning compressor	181 ± 5

SXX

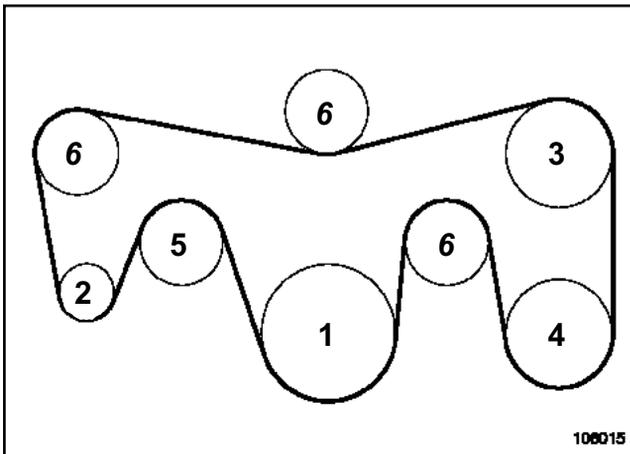


106011

- (1) Crankshaft
- (4) Air conditioning compressor
- (5) Tension wheel
- (M) Measuring point

PXX

Engine type	Belt function	Fitting tension (Hertz)
P9X	Alternator / Power assisted steering pump / Air conditioning compressor	AUTOMATIC TENSION WHEEL

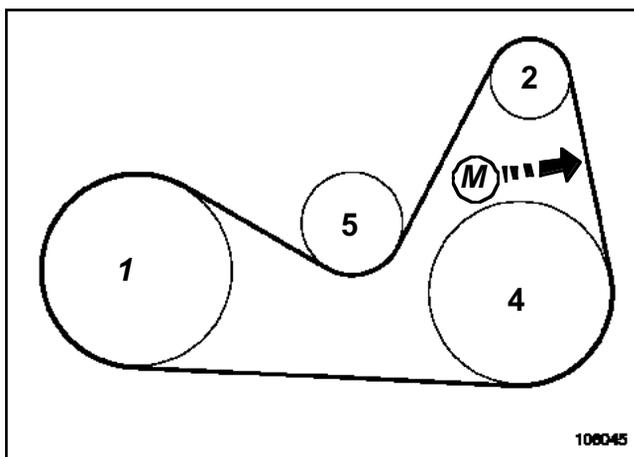


106015

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Idler pulley

VXX

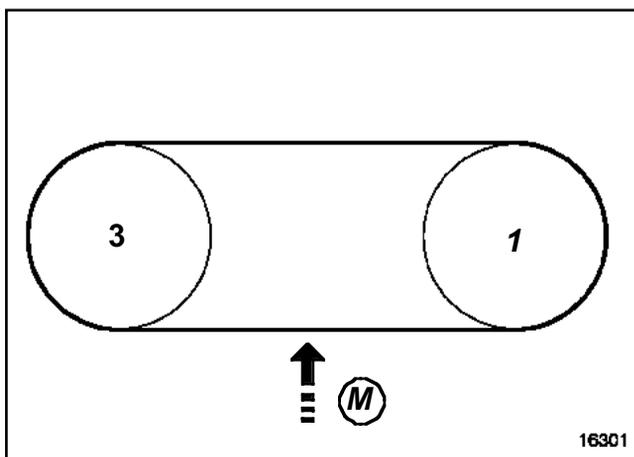
Engine type	Belt function	Fitting tension (Hertz)
V4Y	Alternator / Air conditioning compressor	302 ± 12



106045

- (1) Crankshaft
- (2) Alternator
- (4) Air conditioning compressor
- (5) Tension wheel
- (M) Measuring point

Engine type	Belt function	Fitting tension (Hertz)
V4Y	Power assisted steering pump	231 ± 12



16301

- (1) Crankshaft

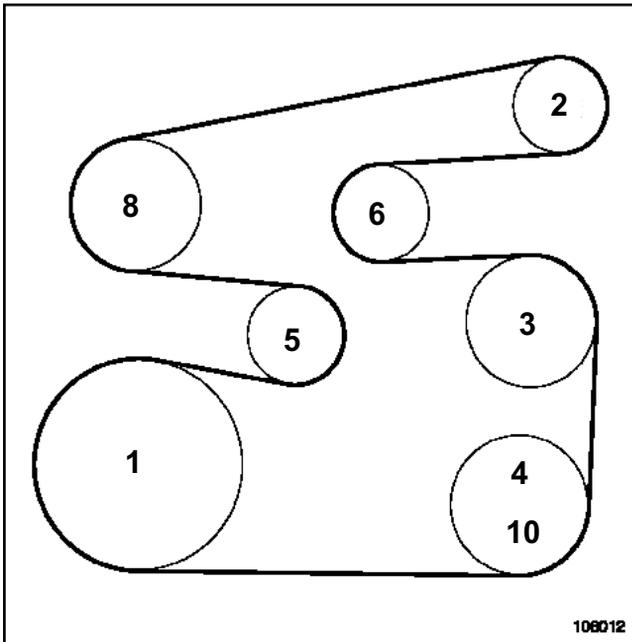
(3) Power assisted steering pump

(M) Measuring point

Accessories belt: Tension values

ZXX

Engine type	Belt function	Fitting tension (Hertz)
ZD3	Alternator / Power assisted steering pump / Air conditioning compressor or Hydraulic pump / Water pump	AUTOMATIC TENSION WHEEL



106012

- (1) Crankshaft
- (2) Alternator
- (3) Power assisted steering pump
- (4) Air conditioning compressor
- (5) Tension wheel
- (6) Pulley
- (8) Water pump
- (10) Hydraulic pump