TECHNICAL NOTE
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MEGANE

Type **JA0 W/4**

Sub-section **11**

11 SPECIAL NOTES ON THE REMOVAL-REFITTING OF THE TIMING BELT FOR K4M-K4J ENGINES

Other sub-sections concerned: **07** **12** **13** **19**

- Engine: **K4M-K4J** **Basic manual** :
- Gearbox :

Attached is the removal-refitting procedure for the timing belt for K4M-K4J engines.

This note will eventually be cancelled and replaced by a new Technical Note (Special notes for vehicles fitted with K4M-K4J engines).

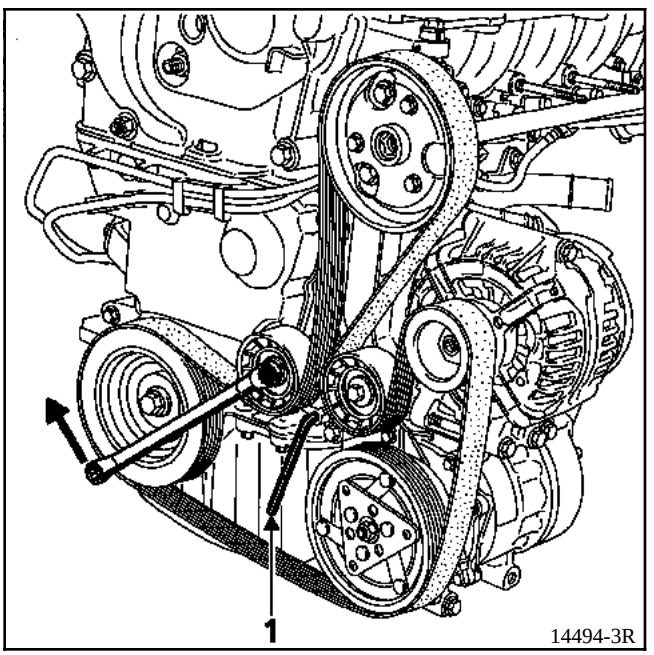
REMOVAL

Put the vehicle on a two post lift.

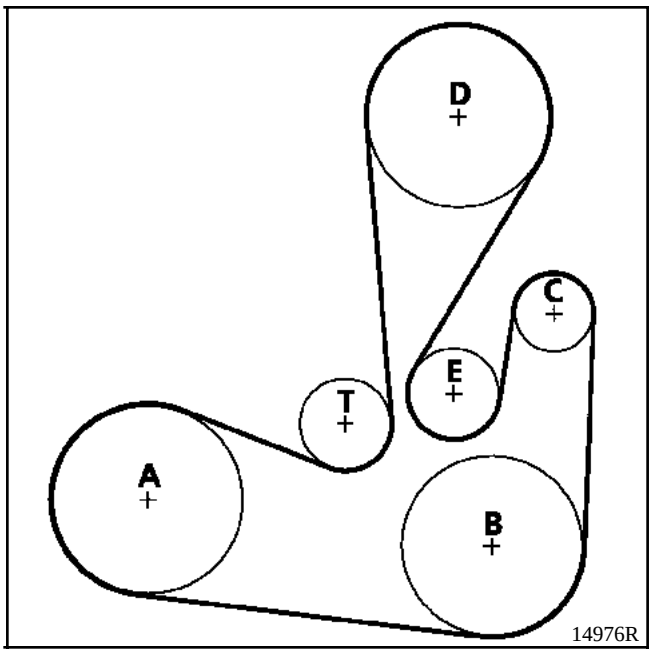
Disconnect the battery under the passenger seat.

Remove the front right hand mudguard.

Pivot the automatic belt tension wheel in the direction indicated below using a **13 mm** wrench Restrain the tension wheel using a **6mm allen key (1).**



ALTERNATOR, POWER ASSISTED STEERING AND AIR CONDITIONING.



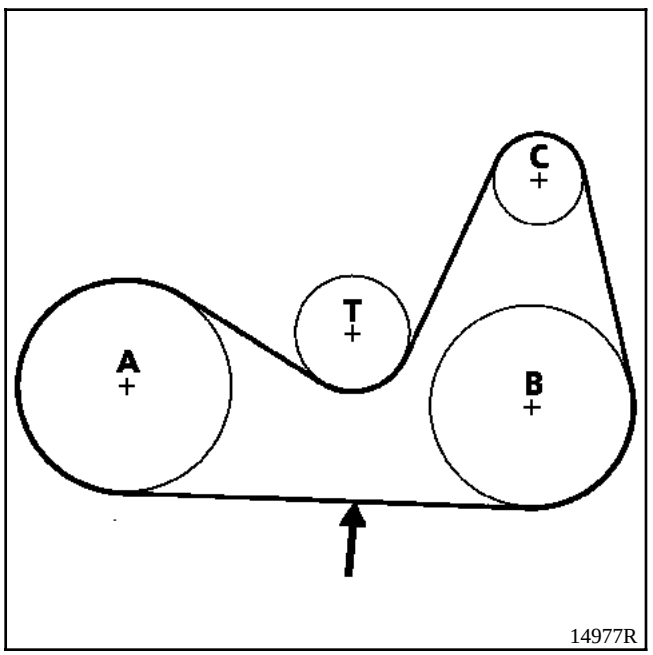
A Crankshaft
B Air conditioning compressor
C Alternator
D Power assisted steering pump
E Pulley
T Automatic tension wheel

REFITTING

Refitting is the reverse of removal.

SPECIAL TOOLING REQUIRED		
Mot.	**1273**	**Tool for checking belt tension**

ALTERNATOR AND POWER ASSISTED STEERING

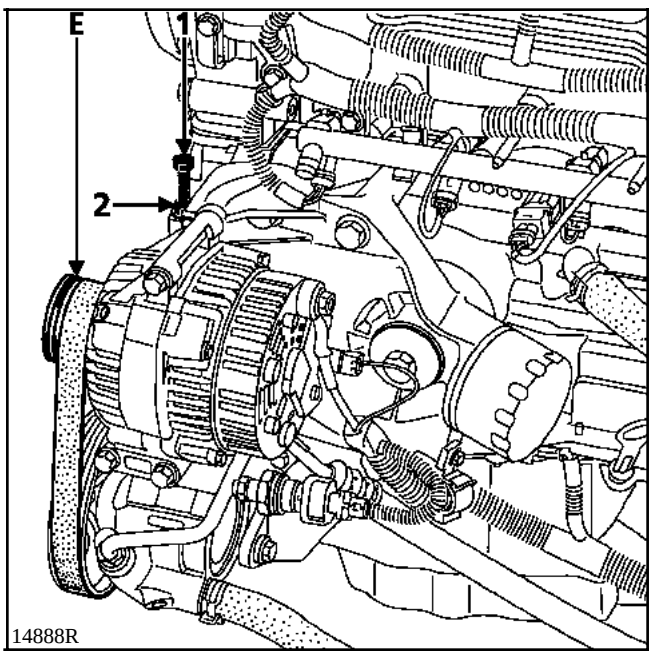


Tightening the belt is carried out using bolt (1) (the two tension wheel mounting bolts having been slackened) then tighten nut (2).

Tension (US = SEEM units)	**Multi-toothed power assisted steering belt**
Setting	108 ± 6
Minimum operation	60

A Crankshaft
B Power assisted steering pump
C Alternator
T Tension wheel

→ Point for checking belt tension



NOTE : the accessories belt has five teeth while the alternator pulley, the power assisted steering pump pulley and crankshaft pulley have six ; therefore it is important to ensure that the tooth at the end of the pulleys (E) remains "free", when fitting the timing belt.

SPECIAL TOOLING REQUIRED		
Mot.	**799 -01**	**Tool for immobilising sprockets for toothed timing belt**
Mot.	**1368**	**Tool for tightening timing pulley**
Mot.	**1489**	**Top Dead Centre pin**
Mot.	**1490**	**Tool for immobilising camshaft pulleys**
Mot.	**1496**	**Tool for setting camshafts**

EQUIPMENT REQUIRED
Angular tightening wrench

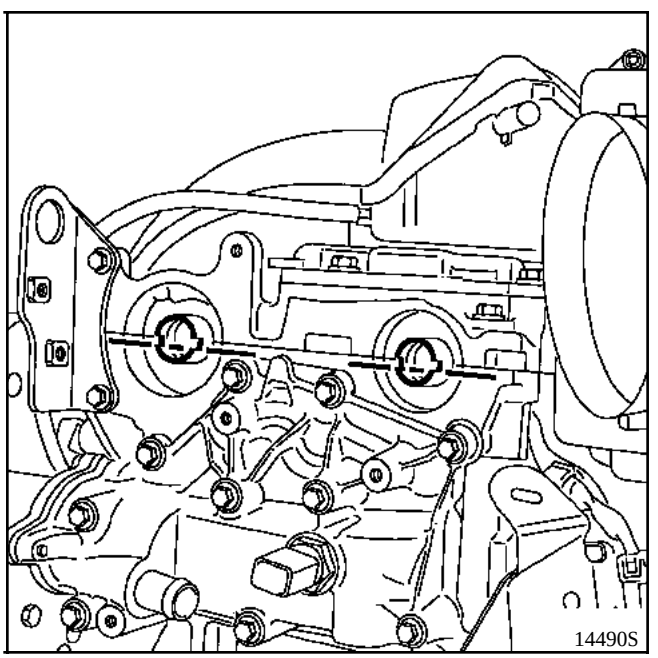
There are two separate procedures for setting the timing.

The first procedure is applied when replacing any component in the front timing area, which does not require slackening of one or more camshaft pulleys.

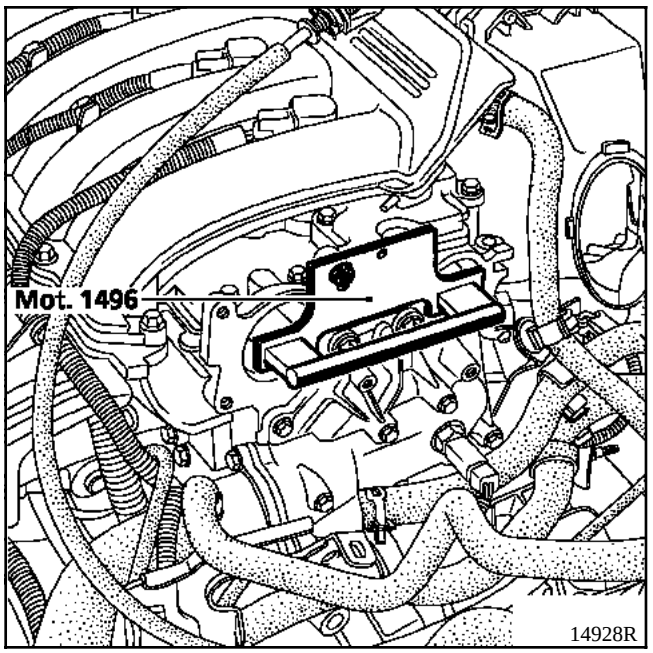
Setting the timing

IMPORTANT:it is important to remove the grease from the nose of the crankshaft, the bore of the timing sprocket and the pressure surfaces of the crankshaft pulley so as to avoid slipping between the timing and the crankshaft which risks damaging the engine.

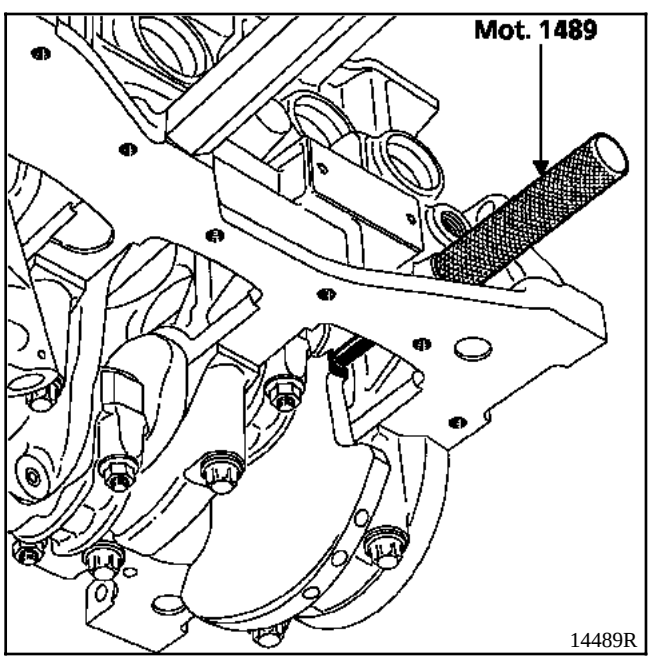
Position the grooves of the camshafts using **Mot. 799-01** as shown on the diagram below.

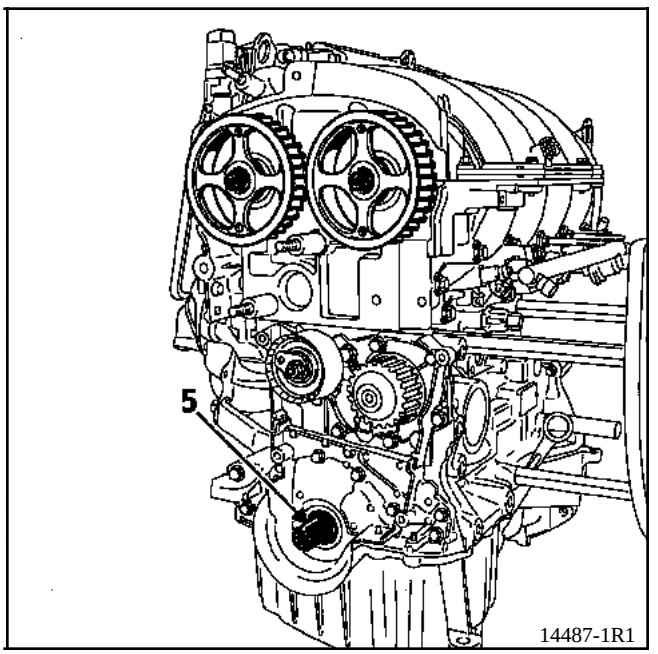


Attach **Mot. 1496** to the end of the camshafts .



Check the crankshaft is against the TDC pin **Mot. 1489** (groove (5) of the crankshaft towards the top).

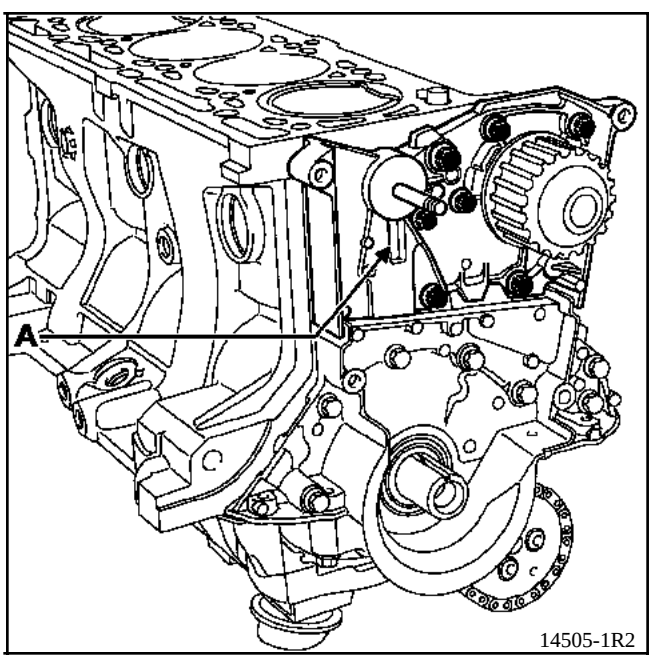




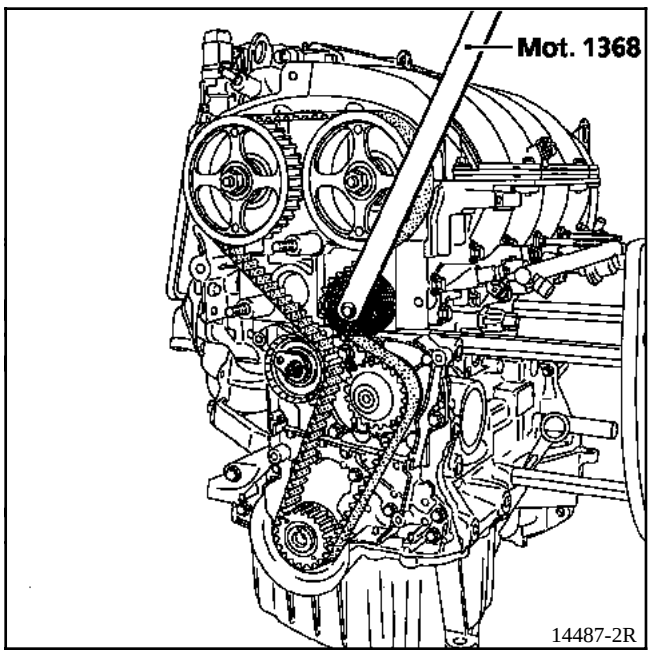
Fitting the timing belt

When replacing the timing belt, it is important to change the tension wheel and the timing pulley .

When refitting the tension wheel take care to ensure that the lug of the wheel is positioned correctly in groove (A).



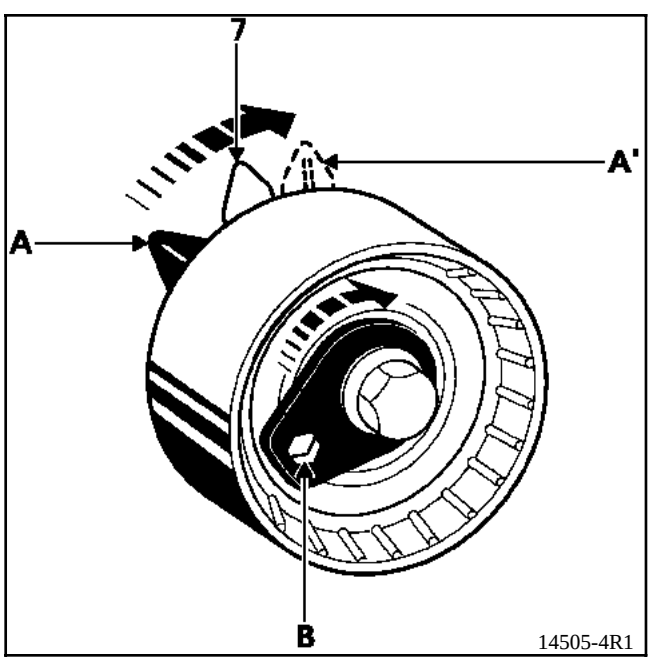
Refit :
- the timing belt
- the pulley by tightening the mounting bolt using **Mot. 1368** (to a torque of **4.5 daN.m** for information only).



Timing belt tension

Move the mobile index (A') on the tension wheel **7** to **8 mm** past the fixed index (7), using a **6 mm** allen key (in B).

NOTE : position (A) corresponds to the mobile index rest position.



Pre-tighten the tension wheel nut to a torque of **0.7 daN.m**.

Refit the crankshaft accessories pulley by refitting the bolt without making contact with the pulley (clearance between bolt / pulley **2** to **3 mm**).

NOTE :
- the crankshaft accessories pulley bolt is reusable if the length under the head does not exceed **49.1 mm** (otherwise replace it),
- do not oil a new bolt. On the other hand, the bolt must be oiled if it is being reused.

Tighten the crankshaft pulley bolt to a torque of **2 daN.m** then apply an angle of **135° ± 15°** (crankshaft against the TDC pin).

Remove **Mot. 1496** which secures the camshafts and Mot**. 1489,** the TDC pin.

Turn the crankshaft twice in a clockwise direction (timing side), and before finishing the two turns, screw the TDC pin **Mot. 1489** in the cylinder block and slowly and smoothly bring the crankshaft against the pin.

Withdraw the TDC pin.

Slacken the tension wheel nut a maximum of one turn, while holding it using a **6 mm** allen key.

Align the mobile index in relation to the fixed index and tighten the nut to a torque of **2.7 daN.m**.

Checking the setting and the tension

Checking the tension

Turn the crankshaft twice in a clockwise direction (timing side)and before finishing the two turns, screw the pin **Mot. 1489** in the cylinder block and slowly and smoothly bring the crankshaft against the pin.

Withdraw the TDC pin.

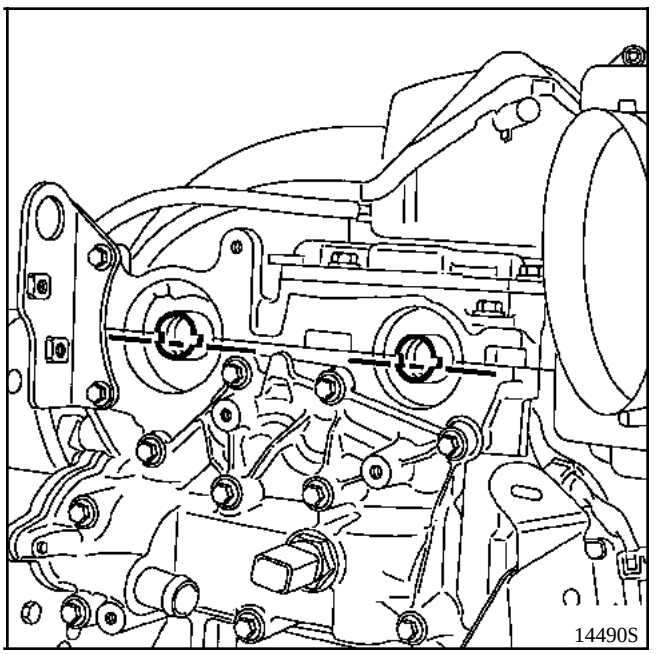
Check the indexes of the tension wheel are aligned, if not repeat the tensioning procedure.

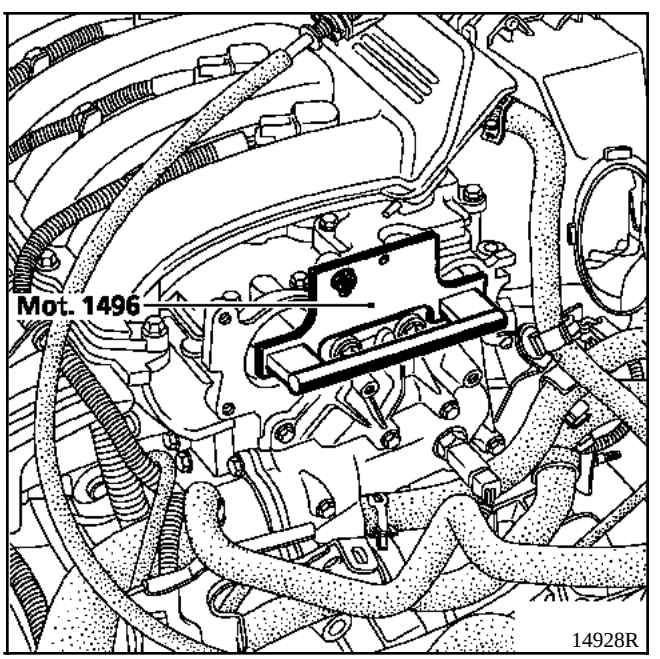
Checking the setting

Ensure the indexes of the tension wheel are in the correct position before checking the timing setting

Screw the TDC pin **Mot. 1489** into the cylinder block then slowly and smoothly bring the crankshaft against the pin.

Attach(without force) **Mot. 1496** to check the camshafts (the grooves on the camshafts must be horizontal.) **If the tool will not engage, the timing must be reset and the belt tensioning procedure must be carried out again.**



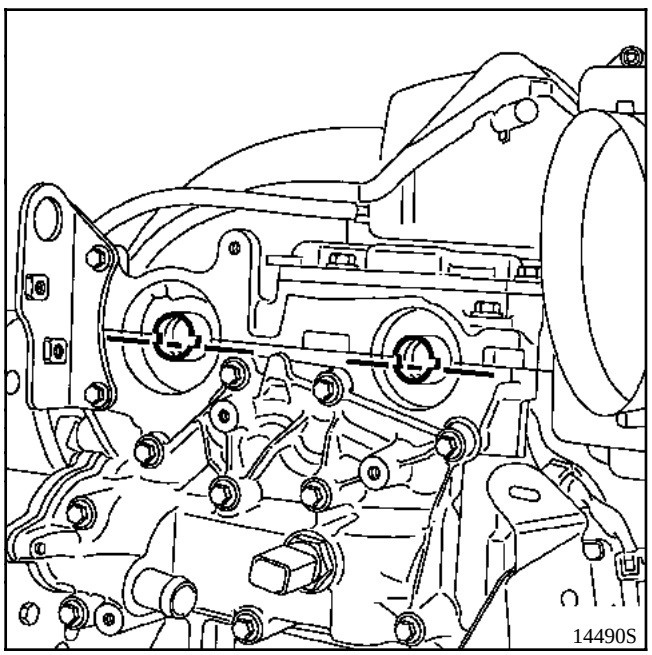


The second procedure is used when replacing all components which need one or more camshaft pulleys to be slackened .

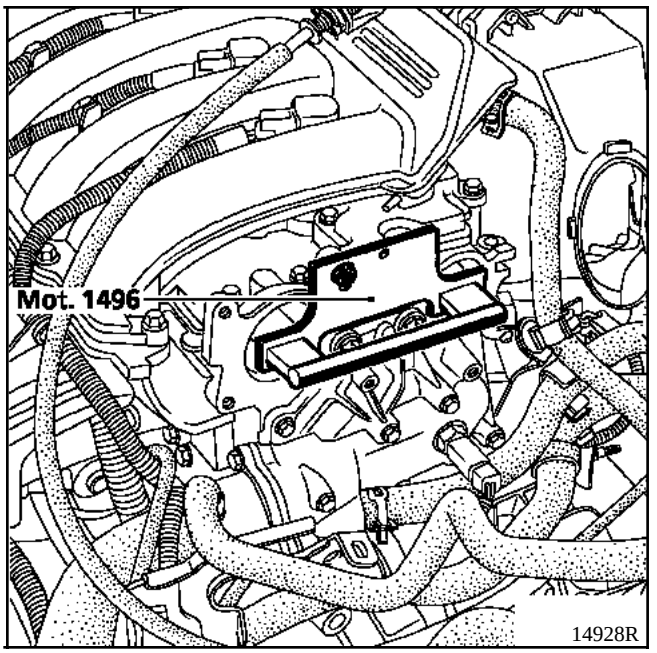
Setting the timing

IMPORTANT: it is important to remove the grease from the nose of the crankshaft, the bore of the timing sprocket, the pressure surfaces of the crankshaft pulley as well as the ends of the camshafts (timing side) so as to avoid slipping between the timing, the crankshaft and the camshaft pulleys which risks damaging the engine.

Position the grooves of the camshafts, as shown on the diagram below, by tightening respectively the two old nuts of the camshaft sprockets on the studs at the end of the camshafts.


14490S

Attach **Mot. 1496** to the end of the camshaft.

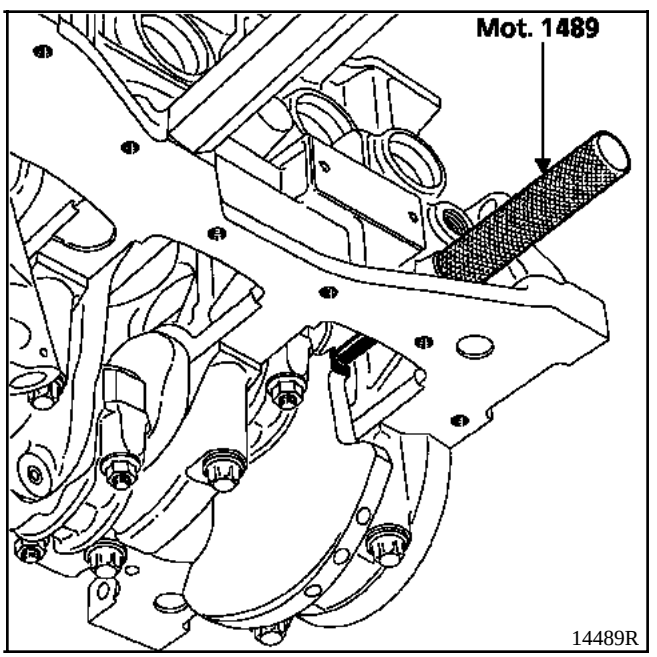


14928R

Put the camshaft pulleys in place by pre- tightening the new nuts (**without locking the nuts, clearance from 0.5 to 1 mm between nut-pulley**).

NOTE : the camshaft nuts must be replaced.

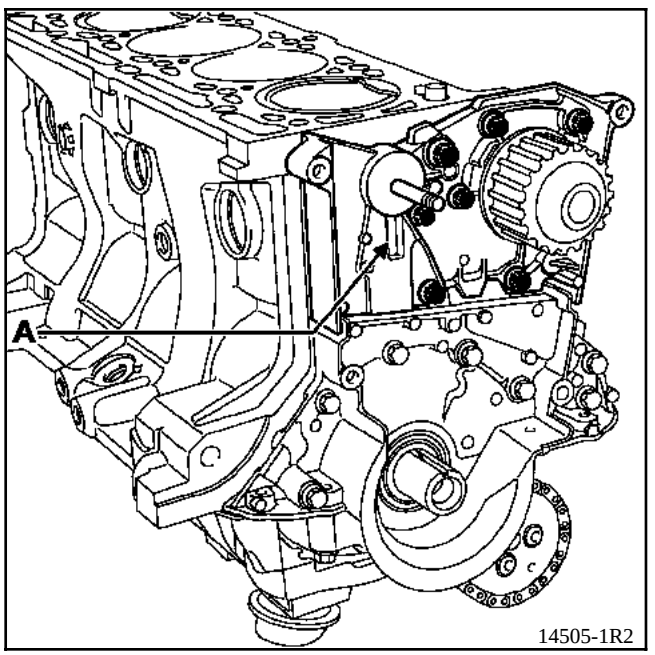
Check the crankshaft is against the TDC pin (groove (5) of the crankshaft towards the top).



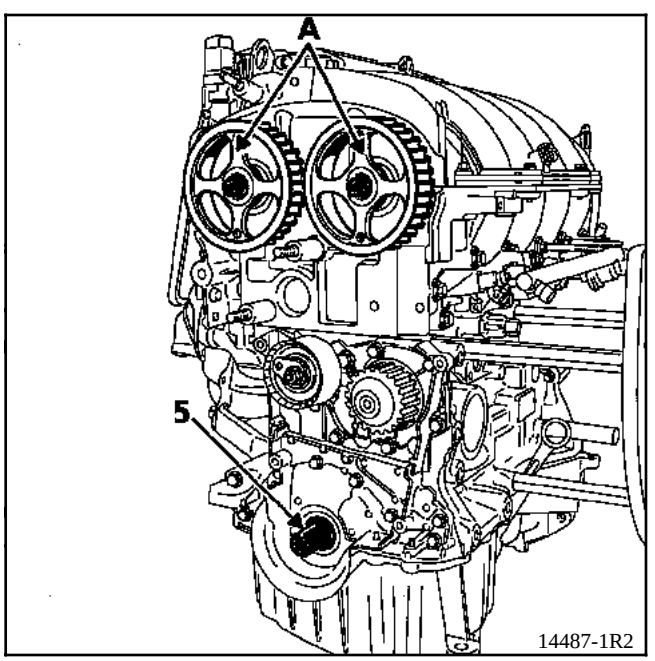
14489R

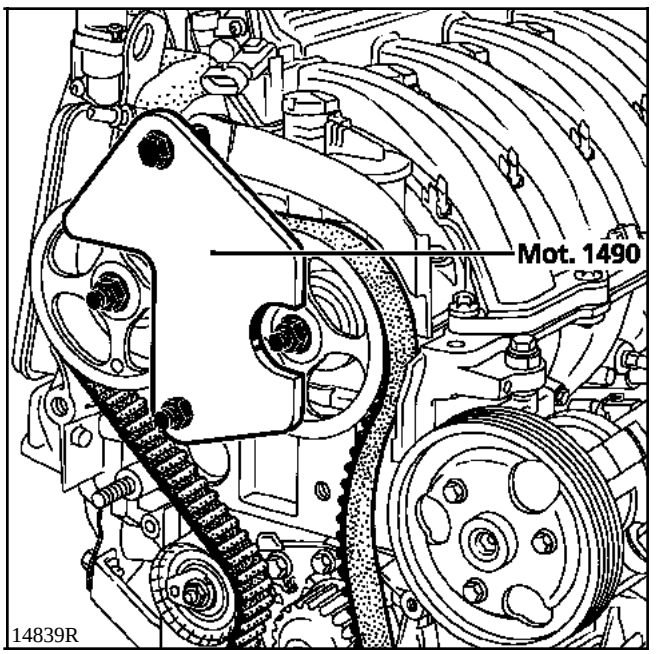
When replacing the timing belt, it is important to change the tension wheel and the timing pulley .

Take care that the lug of the wheel is positioned correctly in groove (A).

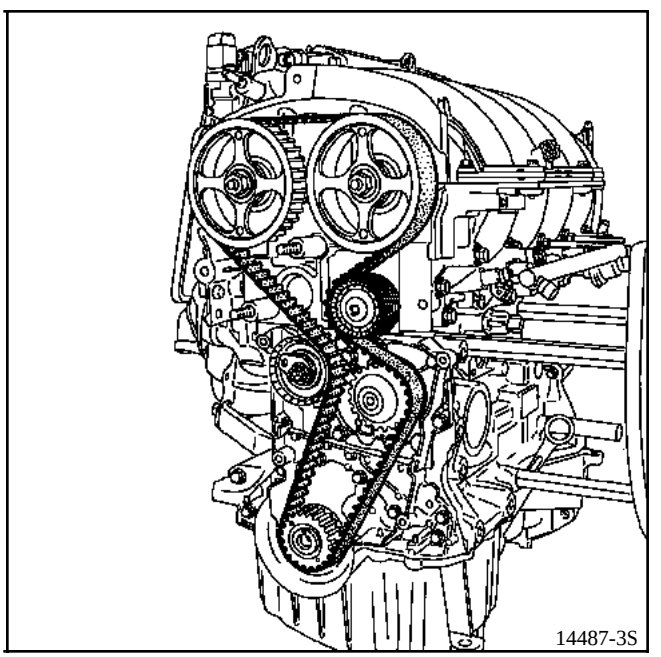


Position the engraved **RENAULT** logo on the camshaft pulley's spokes vertically (A), put the timing belt on the camshaft pulleys then fit tool **Mot. 1490** for locking the camshaft pulleys (use the timing cover mountings to attach **Mot. 1490**).





Refit the pulley by tightening the mounting bolt using **Mot. 1368** (tightening torque **4.5 daN.m** for information only).



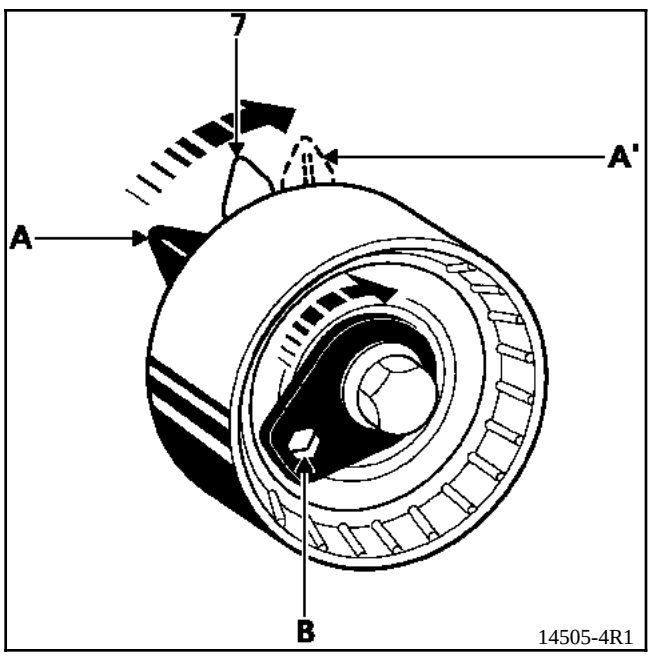
Put the crankshaft accessories pulley in place by pre-tightening the bolt (**without locking the bolt, clearance from 2 to 3 mm between bolt/pulley**).

Belt tension

Check there is still a clearance of 0.5 to 1 mm between the nuts-camshaft pulleys.

Move the mobile index (A') of the tension wheel **7** to **8 mm** past the fixed index (7) using a **6 mm** allen key (in B).

NOTE : position (A) corresponds to the mobile index at rest.



Pre-tighten the tension wheel nut to a torque of **0.7 daN.m**.

Remove the tool locking the camshaft pulleys **Mot. 1490**.

Rotate the timing side six times using the exhaust camshaft pulley using **Mot. 799-01**.

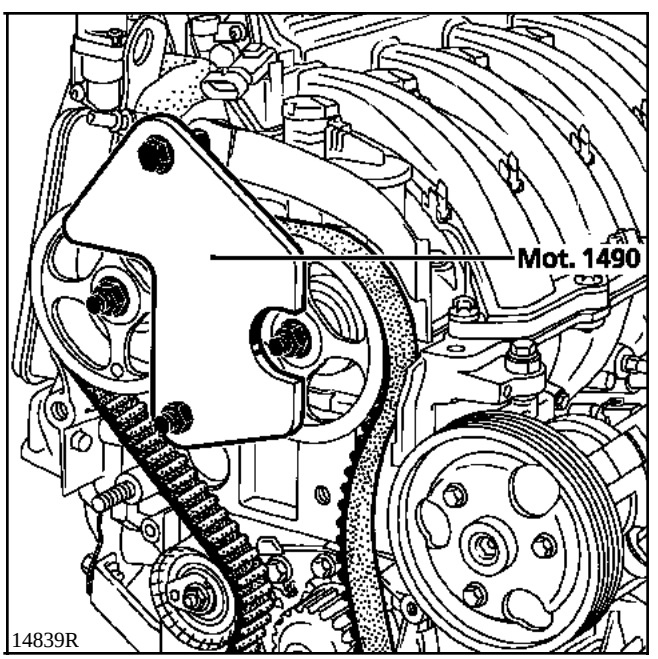
Slacken the tension wheel nut by a maximum of one turn while holding it using a **6 mm** allen key.

Align mobile index (A') in relation to the fixed index (7) and tighten the nut to a torque of **2.7 daN.m**.

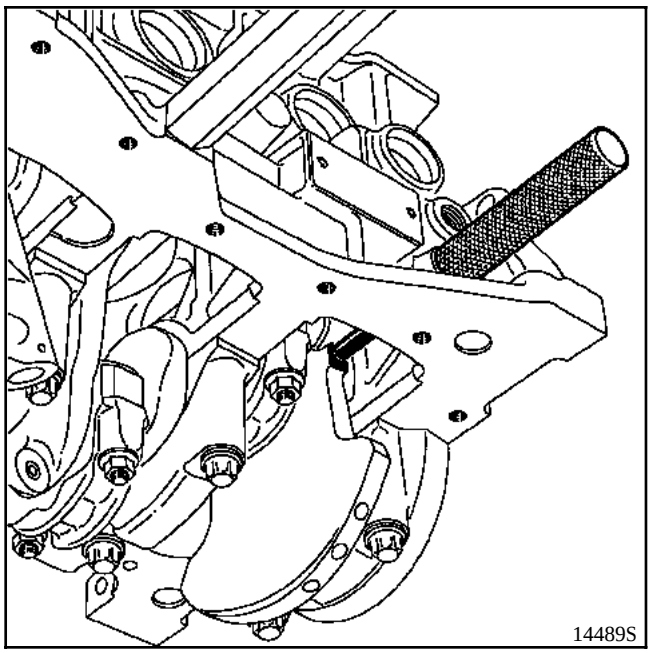
Refit the crankshaft pulley so as to put the lower timing cover in place (without the mounting bolts), then refit the crankshaft pulley.

NOTE :
- the crankshaft accessories pulley bolt is reusable if the length under the head does not exceed **49.1 mm** (otherwise replace it),
- do not oil a new bolt. On the other hand, it is important to oil the bolt if reusing it.

Attach tool **Mot. 1490** for locking the camshaft pulleys , if necessary using **Mot. 799-01**.



Check the crankshaft is against the TDC pin **Mot. 1489**.


14489S

Tighten the crankshaft accessories pulley bolt to a torque of **2 daN.m** then apply an angle of **135**° ± **15**° (crankshaft against the TDC pin).

Tighten the inlet camshaft pulley nut to a torque of **3 daN.m** then apply an angle of **84**°.

Tighten the exhaust camshaft pulley nut to a torque of **3 daN.m** then apply an angle of **84**°.

Remove **Mot. 1496** for setting the camshafts, **Mot. 1490** the camshaft pulley locking tool and **Mot. 1489 the** TDC pin.

Checking the setting and the tension

Checking the tension

Turn the crankshaft twice in a clockwise direction (timing side)and before finishing the two turns, screw the TDC pin **Mot. 1489** in the cylinder block and slowly and smoothly bring the crankshaft against the pin.

Withdraw the TDC pin.

Check the indexes of the tension wheel are aligned, if not carry out the tensioning procedure again. Slacken the tension wheel nut by a maximum of one turn while holding it using a **6 mm** allen key.

Align the mobile index in relation to the fixed index and tighten the nut to a torque of **2.7 daN.m**.

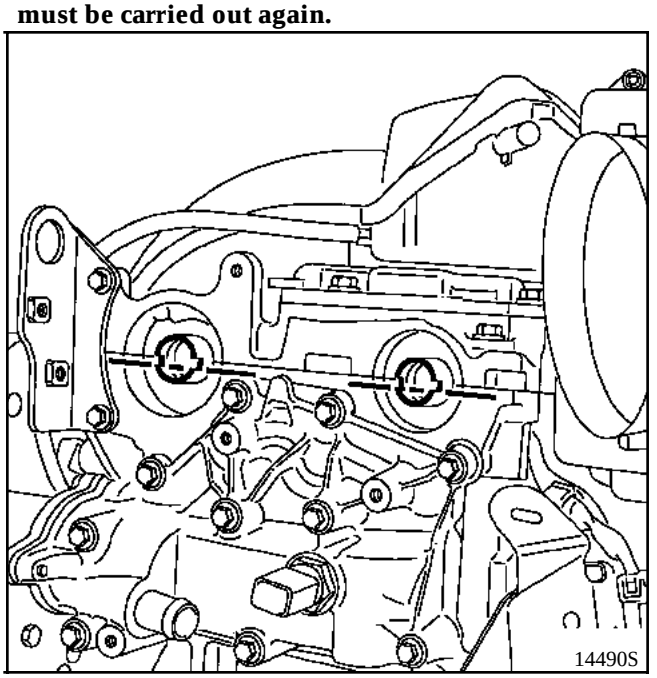
Checking the setting

Ensure the indexes of the tension wheel arein the correct position before checking the timing.

Screw the pin **Mot. 1489** into the cylinder block then slowly and smoothly bring the crankshaft against the pin.

Attach(without force) **Mot. 1496** for checking the camshaft pulleys (the grooves on the camshaft must be horizontal.)

If the tool will not engage, the timing setting procedure and the belt tensioning procedure must be carried out again.


14490S

SPECIAL TOOLING REQUIRED		
Elé.	**1294 -01**	**Tool for removing windscreen wiper arm**
Mot.	**799 -01**	**Tool for immobilising sprockets for toothed timing belt**
Mot.	**1273**	**Tool for checking belt tension**
Mot.	**1368**	**Tool for tightening timing pulley**
Mot.	**1487**	**Tool for fitting inlet camshaft sealing plug**
Mot.	**1488**	**Tool for fitting exhaust camshaft sealing plug**
Mot.	**1489**	**Top Dead Centre pin**
Mot.	**1490**	**Tool for immobilising camshaft pulleys**
Mot.	**1496**	**Tool for setting camshafts**

EQUIPMENT REQUIRED
Engine support tool **Angular tightening wrench**

TIGHTENING TORQUES (in daN.m or/and °)	
Wheel bolts	**9**
Pulley bolt	**4.5**
Crankshaft pulley bolt	**2+ 135° ± 15°**
Tension wheel nut	**2.7**
Mounting bolt on engine for front right suspended engine mounting cover	**6.2**
Mounting bolt for front right suspended engine mounting movement limiter	**6.2**
Engine tie bar bolts	**6.2**

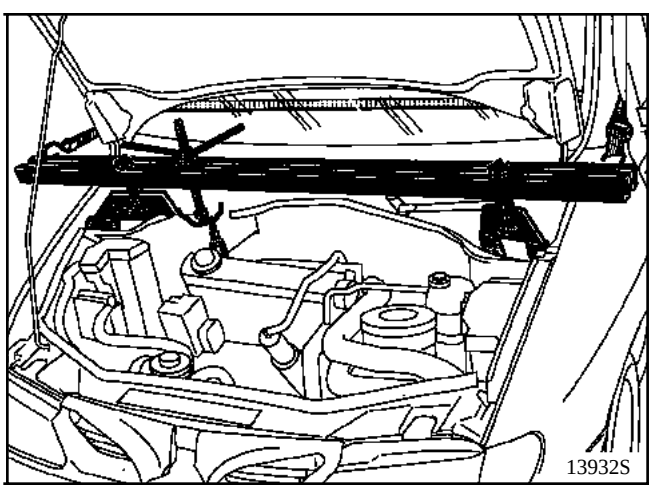
REMOVAL

Place the vehicle on a two post list.

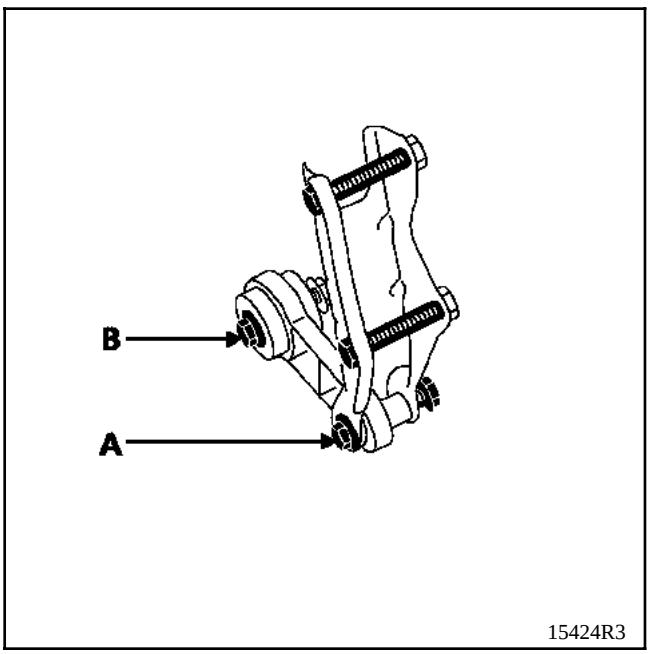
Disconnect the battery under the passenger seat.

Remove:
- the front right hand wheel and the mudguard,
- the windscreen wiper arm using **Elé. 1294-01**,
- the scuttle panel grilles,
- the scuttle panel closure panel,
- the terminal unit mounting bolt on the cover of the suspended engine mounting and move the assembly to one side,
- the shock absorber turret protectors.

Put the engine support tool in place taking care to position the strap correctly.


13932S

Remove:
- the suspended engine mounting cover and the movement limiter,
- bolt (A) and slacken bolt (B) of the engine tie bar,

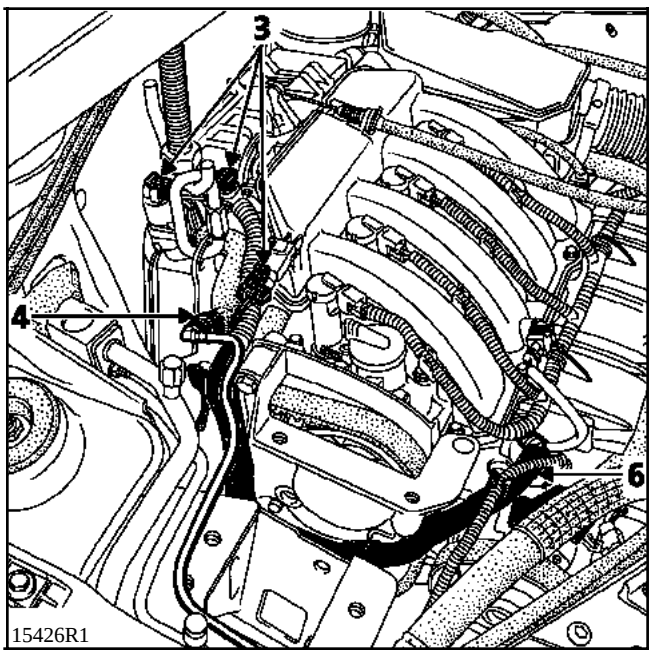


- the accessories belt (see chapter **07** " **Accessories belt tension**").

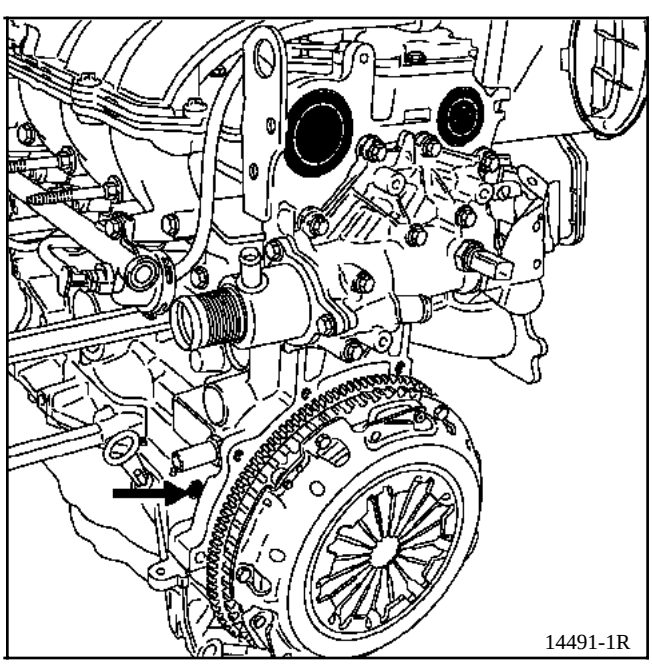
Disconnect the connectors (3) and the pipe (4).

Remove the wiring loom mounting bolt (6).

Unclip:
- the wiring loom on the upper timing cover and move the assembly to one side,
- the fuel pipes on the lower timing cover.

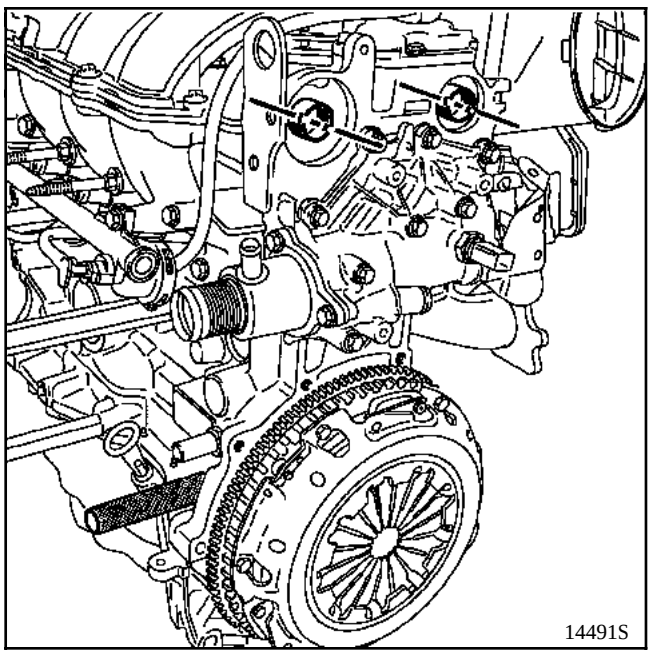


Remove:
- the air resonator,
- the camshaft sealing plugs by piercing the centre of the plug with a screwdriver,
- the **TDC** pin plug.

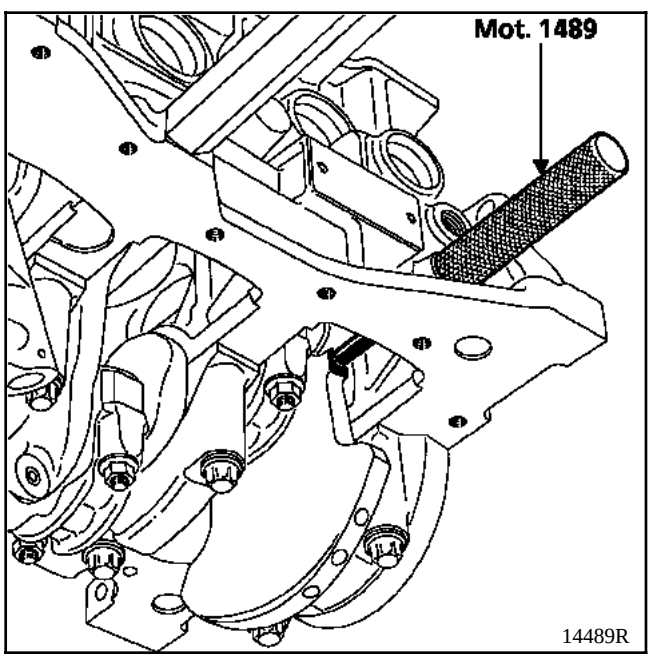


Setting the timing

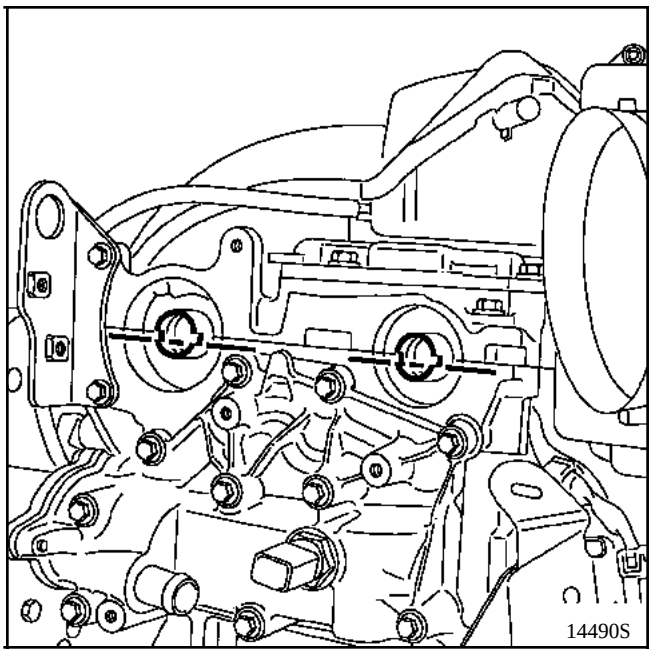
Position the camshaft grooves towards the bottom as indicated in the diagram below.



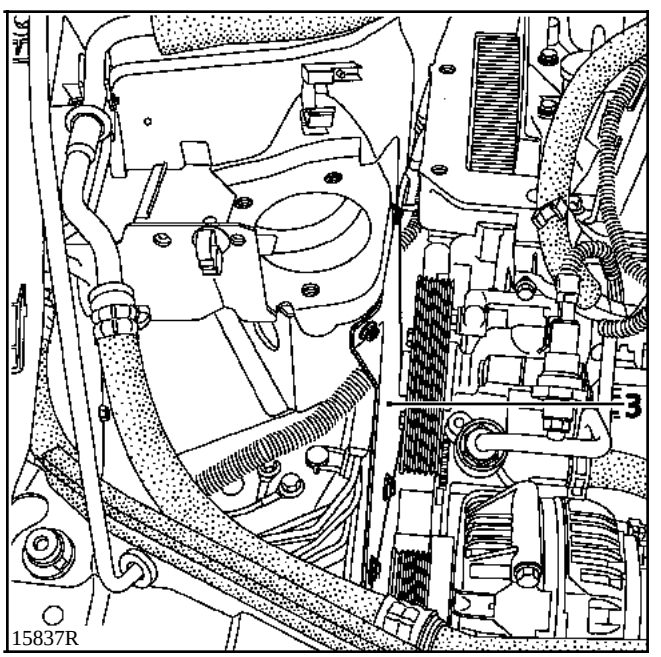
Insert the Top Dead Centre pin **Mot. 1489** then rotate the engine clockwise once (timing side) to slowly and without jerky movements, bring the crankshaft into contact with the pin.



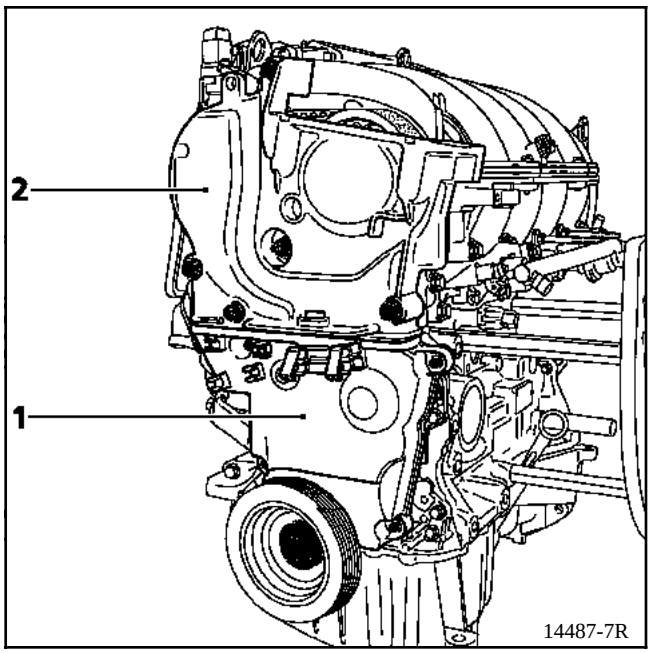
Check that the position of the camshaft grooves is identical to that in the diagram below.



Remove:
- the crankshaft pulley by immobilising the flywheel using a screwdriver,
- panel (3) on the side member,



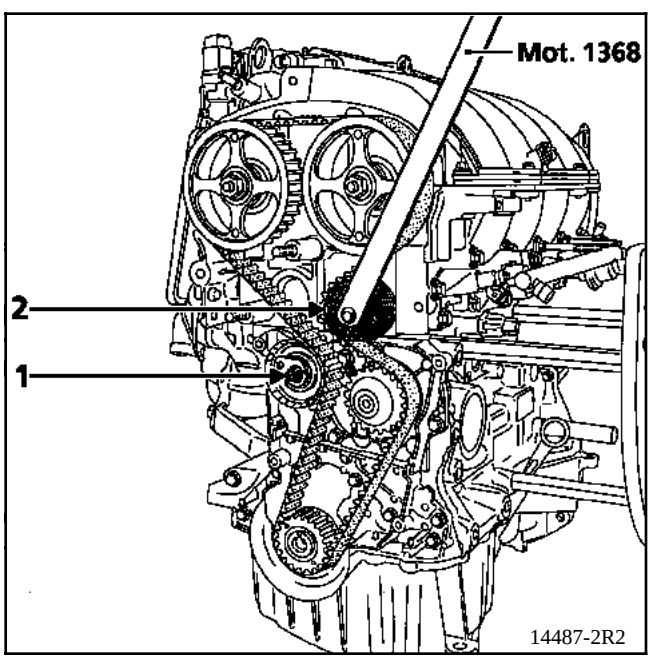
- the lower timing cover(1),
- the upper cover(2).



Slacken the timing belt by slackening nut (1) of the tension wheel.

NOTE: as the crankshaft sprocket is not keyed in place, ensure that it does not fall when the timing belt is being removed.

To remove the timing belt, remove the pulley (2) using **Mot. 1368** or using a right angled torx 50 wrench.

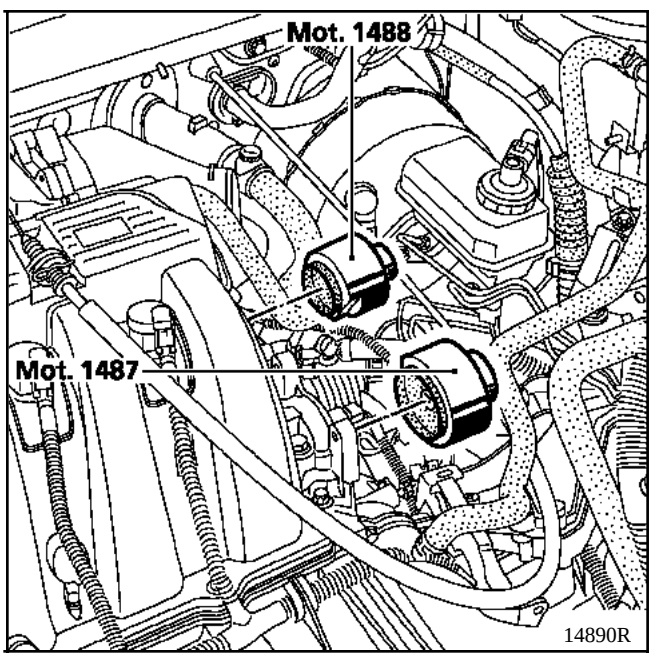


IMPORTANT: it is important to remove the grease from the nose of the crankshaft, the bore of the timing sprocket and the pressure surfaces of the crankshaft pulley so as to avoid slipping between the timing and the crankshaft which risks damaging the engine.

REFITTING

When replacing a timing belt the tension wheel and the timing pulley must be renewed.

Refit:
- the timing belt (the method described in section **07** "**Procedure for tensioning the timing belt**" MUST be observed),
- the accessories belt (see section **07** "**Procedure for tensioning the accessories belt**),
- the new sealing plugs :
  - for the inlet camshaft **(Mot. 1487)**,
  - for the exhaust camshaft **(Mot. 1488)**,



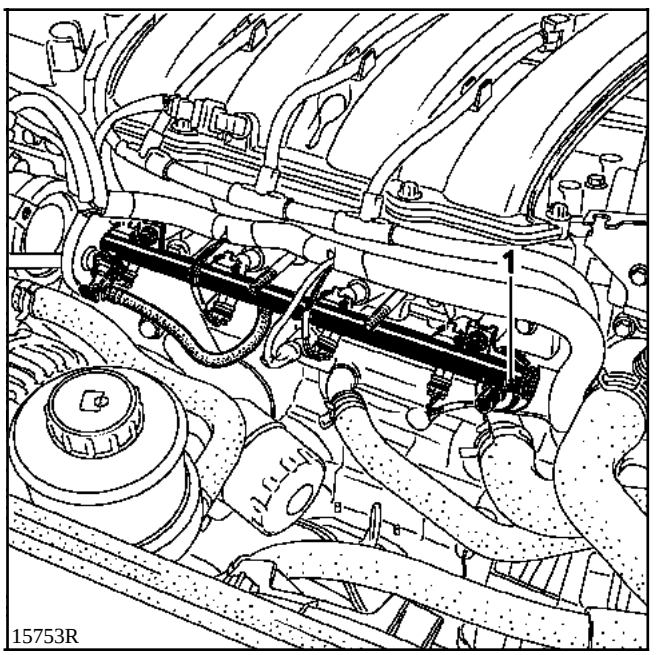
- the right hand suspended engine mounting and the engine tie bar, tightening them to **6.2 daN.m**.

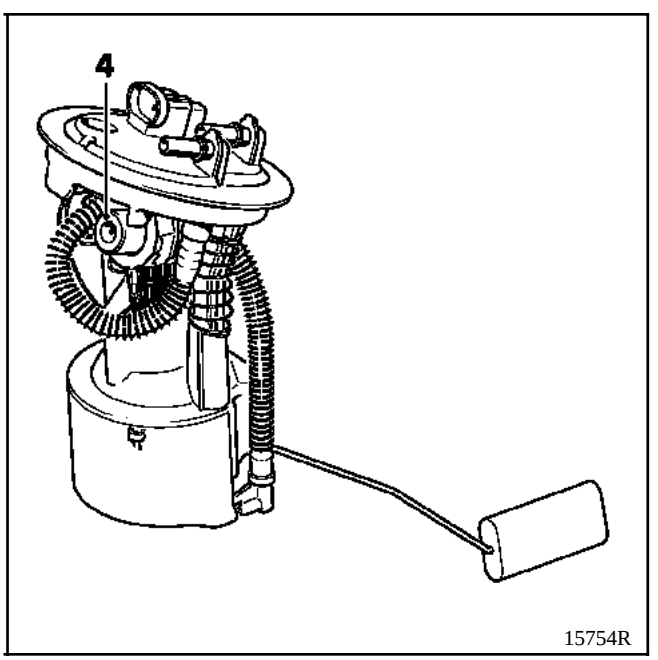
Vehicle	Gearbox	Engine								Injection type
		Type	Suffix	Bore (mm)	Stroke (mm)	Capacity (cm^3)	Compression ratio	Catalytic converter	Depollution standard	
JA0W	JB3	K4J	750	79,5	70	1390	10 / 1	◊ C79 ◊ C109 or ◊ C75 ◊ C109	EU 96	Sequential multipoint
JA04	JB3	K4M	700	79,5	80,5	1598				Static ignition

Checks carried out at idle speed*					Fuel*** (Minimum octane rating)
Speed(rpm.)	Emission of pollutants**				
	CO (%) (1)	C02 (%)	HC (ppm)	Lambda (λ)	
750 ± 50	0.5 maximum.	14.5 minimum.	100 maximum.	0.97 < λ < 1.03	Super unleaded (OR 95)

(1) at 2500 rpm, the CO must be 0.3 maximum.
* For a coolant temperature greater than **80 °C** and after stabilising speed at **2 500 rpm.** for approximately **30 seconds**.
** For legal values, see specification for each country.
*** Compatible with **OR 91** unleaded fuel.

According to the vehicle version, the regulator (4) is situated in the engine compartment at the end of the injector gallery (1) or in the fuel tank, on the fuel gauge and sender unit / pump assembly. In this case, the end of the gallery, the tank return union and the regulator mounting are blocked. The regulator is not removable.





In order to carry out a replacement, see method "**Chapter 19 : Fuel tank fuel gauge and sender unit/pump**".

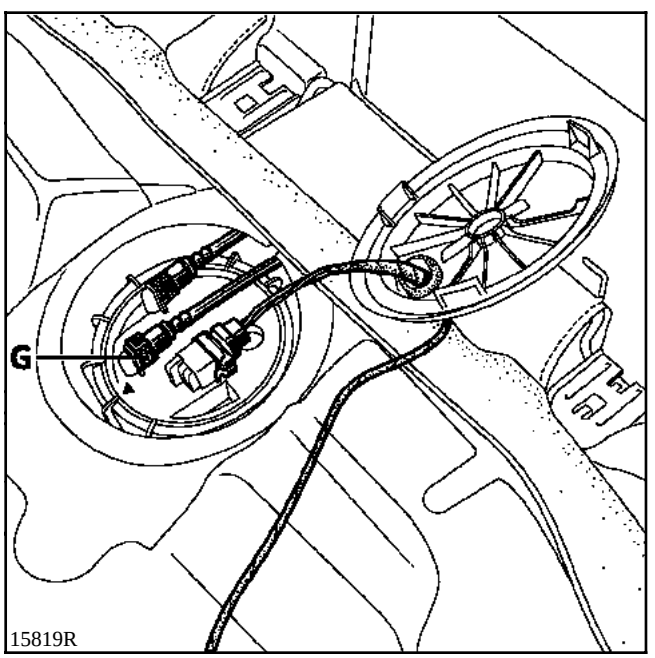
CHECKING THE FUEL PUMP FLOW

SPECIAL TOOLING REQUIRED
Mot. 1311 -01 Fuel pressure checking kit **Mot. 1311 -02 with pressure gauge** **Mot. 1311 -04 and sockets** **Mot. 1311 -05**
EQUIPMENT REQUIRED
2000ml measuring cylinder

IMPORTANT: take care to protect sensitive parts from the fuel remaining in the pipes.

Vehicles without fuel return to the tank

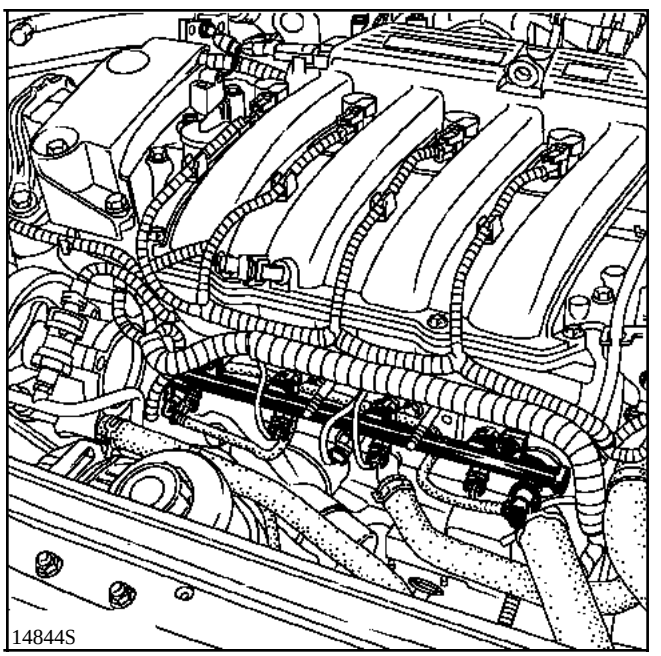
Disconnect the pipe (G) located on the petrol gauge / pump / filter / regulator assembly.



Attach a pipe in order to drain from pump the into the measuring cylinder.

Vehicles with fuel return to the tank

Disconnect the fuel return pipe located on the injector gallery and position it so it empties into a measuring cylinder.



Operate the pump using the fault finding tools.

Measure the pump flow.

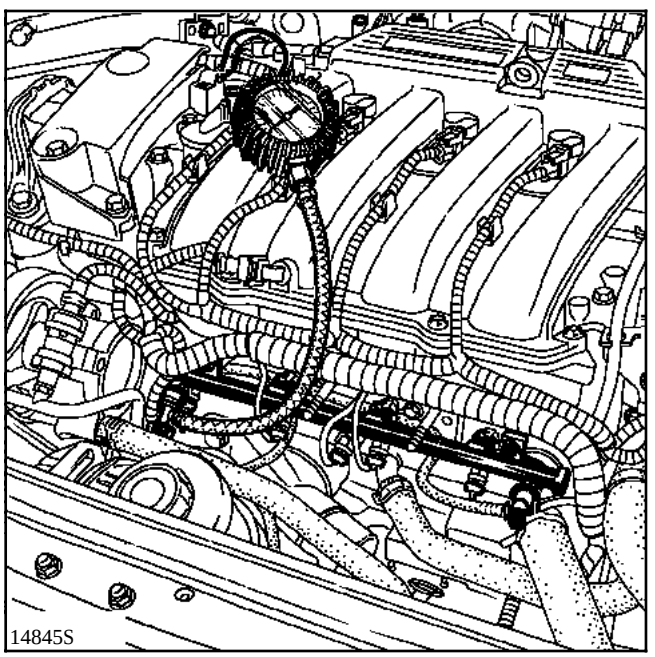
Flow noted : **60 to 80 litres/hour**.

CHECKING THE FUEL PUMP PRESSURE

SPECIAL TOOLING REQUIRED	
Mot. 1311 -01	**Pressure checking tool**
Mot. 1311 -02	**with pressure gauge**
Mot. 1311 -04	**and sockets**
Mot. 1311 -05	

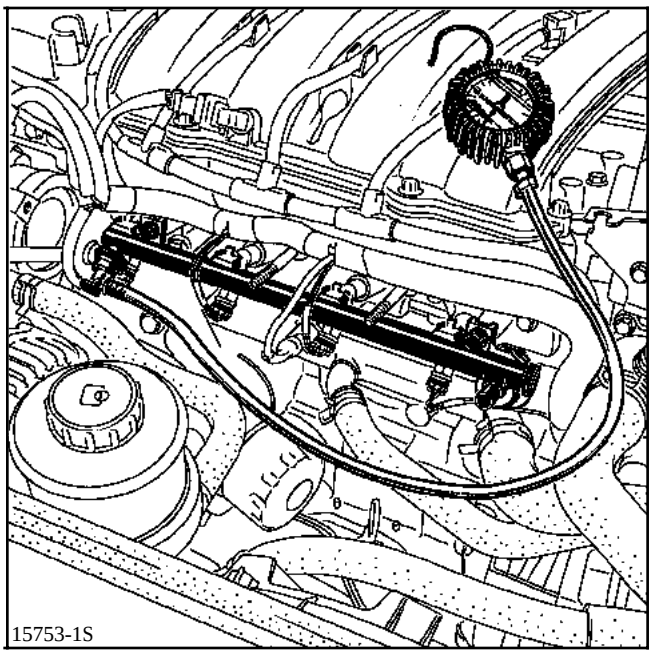
IMPORTANT: take care to protect sensitive parts from the fuel remaining in the pipes.

Disconnect the fuel supply pipe and fit a "T" union fitted with a pressure testing gauge.


14845S

Start the engine in order to operate the fuel pump .

Note the fuel pressure on the pressure gauge.


15753-1S

Pressure read :vehicles with return **3 ± 0.2 bars**

vehicles without return **3.5 ± 0.2 bars**

For vehicles with fuel return (regulator located on the gallery), when a vacuum pump is used to apply a vacuum to the regulator, there should be a drop in fuel pressure.

Vehicles without return(regulator on the gauge / pump assembly) operate with a constant fuel pressure.

NOTE : it may take a few seconds to obtain the correct pressure in the injector gallery .

SPECIAL TOOLING REQUIRED	
Tav. 1233 -01	**Tooling for operation on the front sub-frame and axle assembly**

TIGHTENING TORQUES(in daN.m)	
Engine tie bar bolt	**10.5**
Oxygen sensor	**4.5**
Steering shaft yoke bolt	**2.5**
Engine sub-frame mounting bolt	
- front diameter 10	**6**
- rear diameter 12	**11**
Three point plate nuts	**2**
Engine sub frame side member tie -rod bolts	**3**

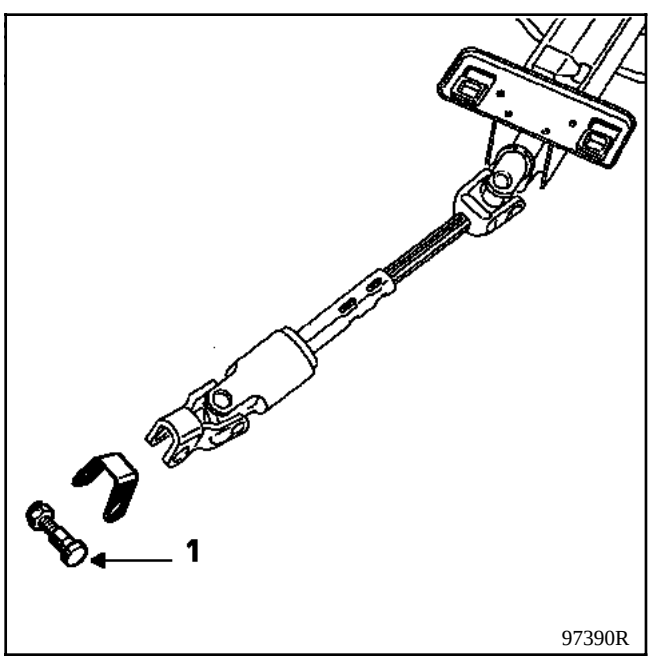
Put the vehicle on a two post lift.

Disconnect the battery located under the passenger seat.

Fit a locking tool to the steering wheel.

Remove:
- the two half grilles on the scuttle panel,
- the bulkhead panel,
- the air resonator,
- the vacuum pipe on the inlet manifold,
- the idle speed regulation motor connector,
- the air filter unit.

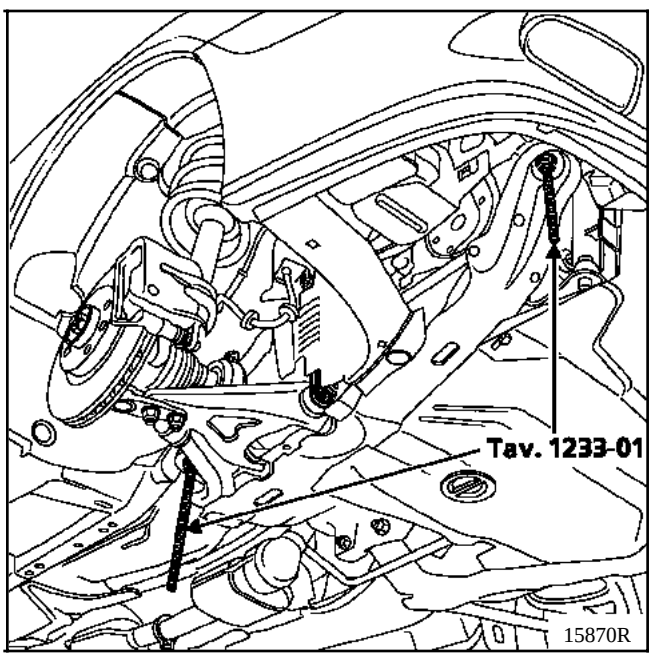
Slacken the catalytic converter / exhaust manifold mounting nuts.



97390R

Remove:
- the engine sub-frame tie-rod bolts,
- the nut and eccentric bolt (1) on the steering shaft yoke,
- the engine tie bar.

Fit tool **Tav. 1233-01** in place by replacing the engine sub frame bolts one by one.



15870R

Lower the engine sub-frame by **2 cm** at the front and by **4 cm** at the rear.

Disconnect the oxygen sensor located downstream from the catalytic converter if the vehicle is fitted with one.

Remove the exhaust mounting clip.

Remove the catalytic converter mounting nuts and extract it taking care not to damage the heat shields.

REFITTING

Refitting is the reverse of removal

IMPORTANT: any damaged heat shield must be replaced in order to avoid a risk of fire .

SPECIAL TOOLING REQUIRED	
Mot. 1397	**Universal spanner for removal of fuel sender unit nut**

IMPORTANT :
When carrying out any operation on the tank or on the fuel supply circuit, it is important :
- **not to smoke and and not to approach the area in which work is being carried out with an incandescent object,**
- **to protect yourself from petrol splashes due to residual pressure in the pipes .**

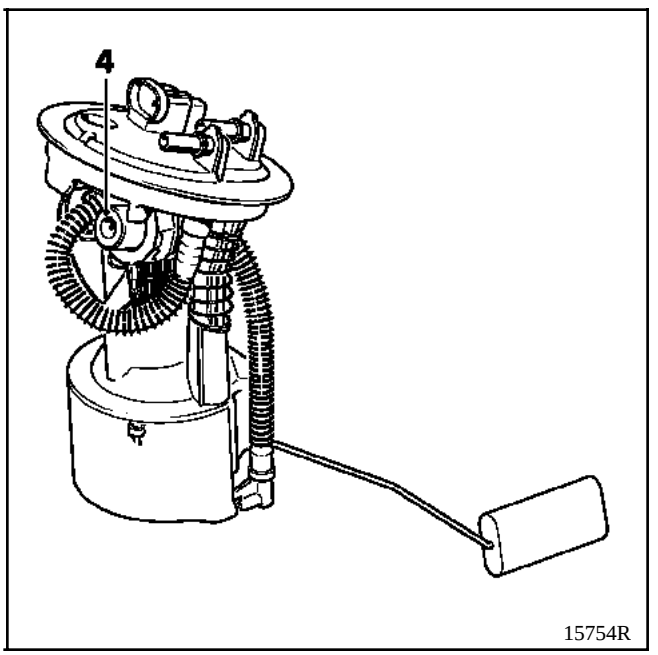
REMOVAL

Removal of the fuel sender unit / pump assembly does not require the removal of the tank. It is accessible through a cover located in the vehicle. To be able to carry out the operation :
- disconnect the battery,
- remove the cover plug,
- disconnect the connector,
- disconnect the fuel tank supply and return pipes.

Remove the mounting nut using tool **Mot. 1397** (release the nut, remove the tool, unscrew the bolt by hand and remove it).

Carefully remove the fuel sender unit / pump assembly containing the fuel pressure regulator.

NOTE : as soon as possible tighten the nut on the tank, even without the fuel sender unit/pump assembly, in order to prevent the tank from deforming.The tank must not drain for more than a quarter of an hour between removal and refitting of the nut



NOTE : for all vehicles operating without a fuel return pipe from the engine to the tank, the pressure regulator (4) is located on the fuel sender unit / pump assembly. Therefore it can not be removed.

REFITTING

The O ring must be replaced.