D4 4-cylinder petrol engine

Contents

10A

ENGINE AND LOWER ENGINE ASSEMBLY

ENGINE AND LOWER ENGINE ASSEMBLY Engine: Refitting 10A-127 Timing belt: Removal 10A-130 10A-133 Timing belts: Refitting

General information	10A-1
Engine identification	10A-2
Tightening torque	10A-4
Upper engine: Specifications	10A-12
Engine peripherals: Specifications	10A-19
Consumables	10A-26
Parts to be replaced systematically	10A-27
Special notes	10A-28
Standard replacement	10A-29
Special tooling	10A-30
Equipment	10A-40
Engine: Dismantling	10A-42
Timing - cylinder head: Removal	10A-45
Stripping the cylinder head	10A-50
Upper engine: Cleaning	10A-56
Upper engine: Checking	10A-57
Rebuilding the cylinder head	10A-65
Cylinder block: Dismantling	10A-78
Running gear:Removal	10A-83
Lower engine: Cleaning	10A-85
Lower engine: Check	10A-86
Running gear Refitting	10A-91
Cylinder block: Refitting	10A-100
Timing - cylinder head: Refitting	10A-114

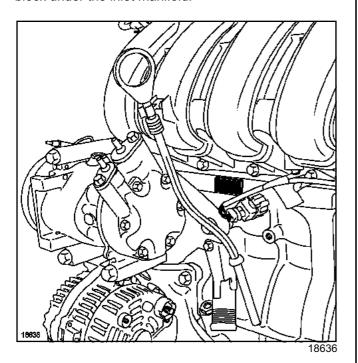
ENGINE AND LOWER ENGINE ASSEMBLY Engine identification

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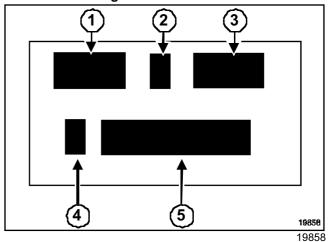
D4D, and 700 or 712 or 720 - D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740

I -ENGINE IDENTIFICATION

The engine identification is located on the cylinder block under the inlet manifold.



Details of markings



The markings include:

- (1): the engine type
- (2): the engine approval letter
- (3): the engine suffix
- (4): the factory where the engine was fitted
- (5): the engine production number

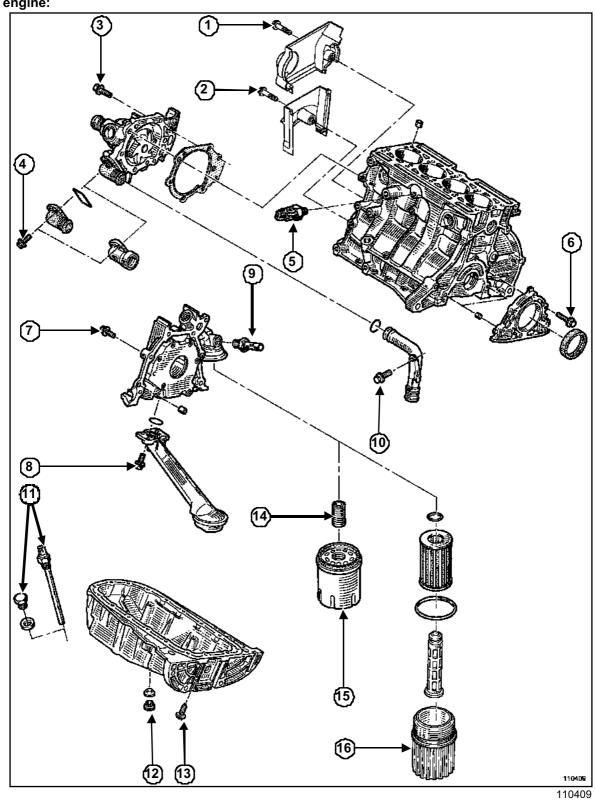
II - ENGINE SPECIFICATION TABLES

Vehicle	After- Sales Type:	Engine type	Engine suffix	Cubic capa- city (cm ³)	Bore (mm)	Stroke (mm)	Com- pression ratio
	С06Н	D4D	712	999	69	66.8	9.8 ± 0.6
TWINGO	X06C X06D X06K	D4F	702	1149	69	76.8	9.8 ± 0.6
	XB06	D4D	700	999	69	66.8	9.8 ± 0.6
CLIO II	XB05 XB0W XB11 XB19 XB1Y XB2T XB2U XB2V	D4F	706 712 714 722 728	1149	69	76.8	9.8 ± 0.6

ENGINE AND LOWER ENGINE ASSEMBLY Tightening torque

D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740

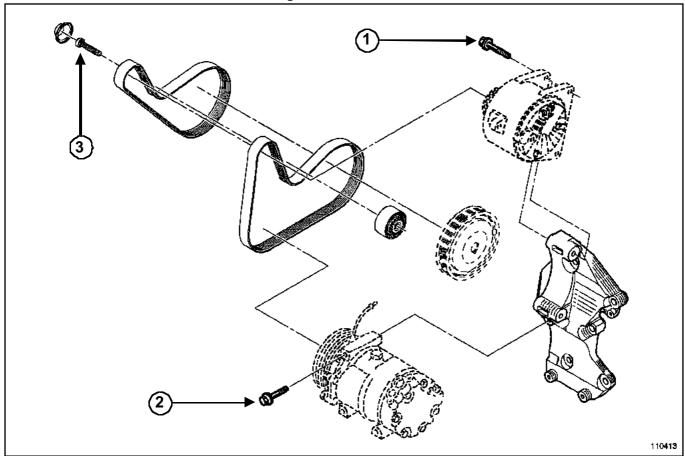
Lower engine:



ENGINE AND LOWER ENGINE ASSEMBLY Tightening torque

D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740

Accessories end: Alternator / Air conditioning



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Accessories end: Alternator / Air conditioning

Tightening torques in Nm and/or in °			
-	Multifunction accessories mounting bolt	50	
1	Alternator bolt	21	
2	Air conditioning compressor bolt	21	
3	Manual tensioner bolt	37	

Engine peripherals: Specifications

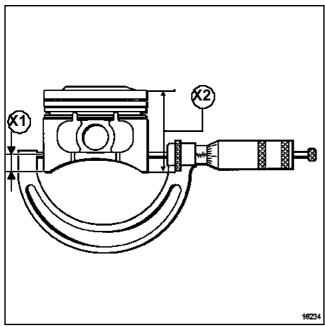
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D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740

(6) Gudgeon pin hole axis.

(7) Offset between gudgeon pin hole and piston axis of symmetry is **0.8 mm**.

2 - Measuring the piston diameter



16234

D4D

The piston diameter should be measured at height **X1** = **10** mm for a diameter of:

- class (A): 68.956 ± 0.006 mm.

- class (B): $68.969 \pm 0.006 \text{ mm}$.

The height of the piston is X2 = 50.86 mm.

D4F

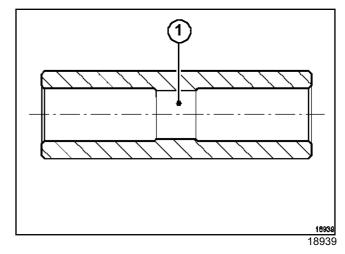
The piston diameter should be measured at height **X1** = **9 mm** for a diameter of:

- class (A): 68.976 ± 0.006 mm.

- class (B): 68.989 ± 0.006 mm.

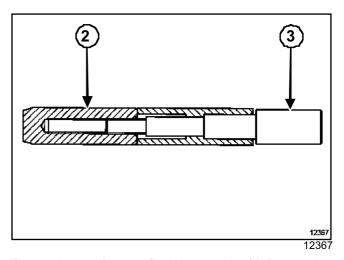
The height of the piston is X2 = 44,70 mm.

II - GUDGEON PIN



The gudgeon pin is fitted freely in the piston and tight in the con rod.

The gudgeon pin has an inner shoulder (1).



The gudgeon pins are fitted using ring **19 B**, centring device **C19(2)** and fitting shaft **A19(3)** of (Mot. 574-25)

Measuring the gudgeon pin

- External diameter: 17.495 to 17.499 mm

- Internal diameter: 10.3 to 10.6 mm

- Length: 53.8 to 54 mm

- Internal diameter of shoulder: 9.66 ± 0.2 mm

- Length of inner shoulder: 8.2 ± 0.15 mm

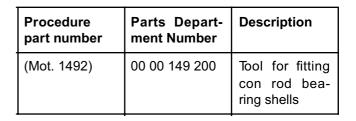
10A-20

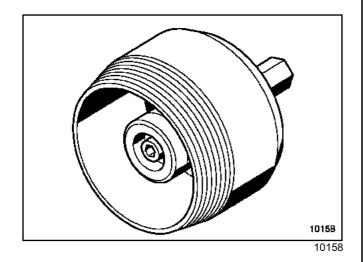
ENGINE AND LOWER ENGINE ASSEMBLY Special tooling

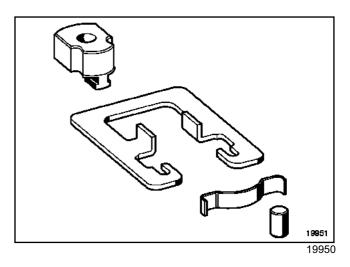
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D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740

Procedure part num- ber	Parts Depart- ment Num- ber	Description
(Mot. 1374)	00 00 137 400	Oil pump seal extractor

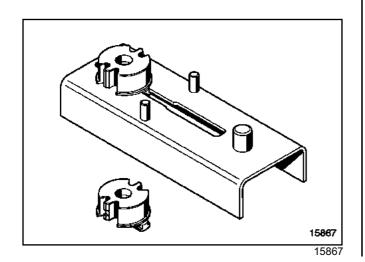


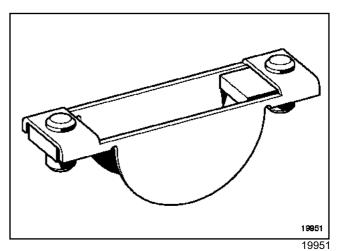




Procedure part num- ber	Parts Depart- ment Num- ber	Description
(Mot. 1377)	00 00 137 700	Crankshaft oil seal removal tool, 80 x 70 x 8.

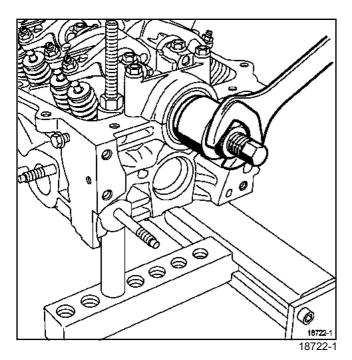
Procedure part num- ber	Parts Depart- ment Num- ber	Description
(Mot. 1492- 04)	00 00 149 204	Adaptation kit for fitting the separable con rod bearing shells.



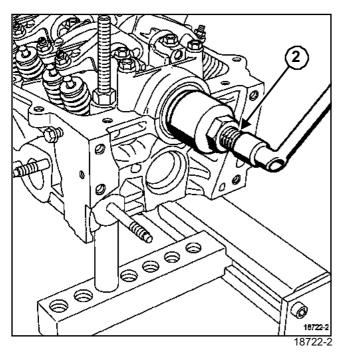


ENGINE AND LOWER ENGINE ASSEMBLY Stripping the cylinder head

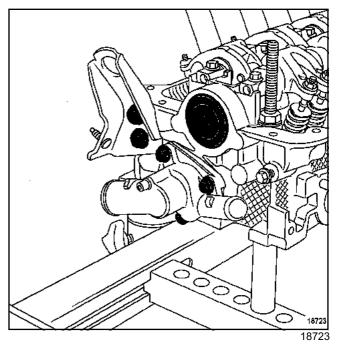
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740



☐ Remove the lip seal by screwing extractor (Mot. 1381) into the seal.

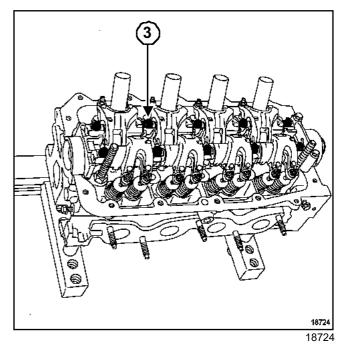


□ Remove the seal by tightening bolt (2) of the (Mot. 1381).



□ Remove:

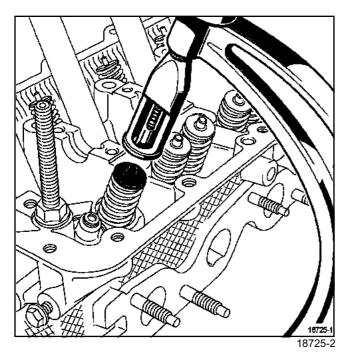
- the lifting eye,
- the coolant outlet unit,
- the camshaft cap.

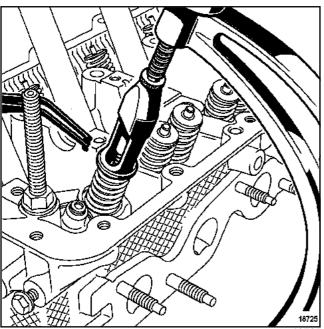


☐ Remove the rocker arm rails, unscrewing bolts (3).

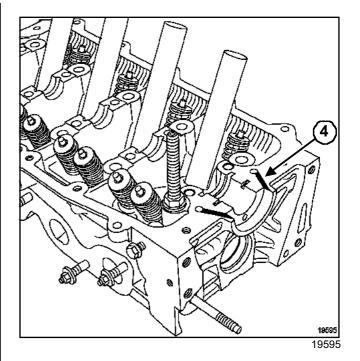
ENGINE AND LOWER ENGINE ASSEMBLY Rebuilding the cylinder head

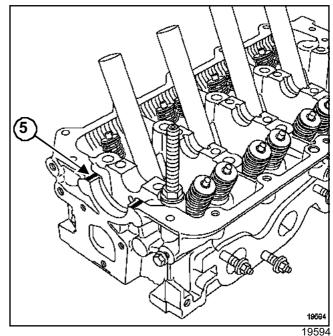
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740





☐ Refit the cotters using tweezers.





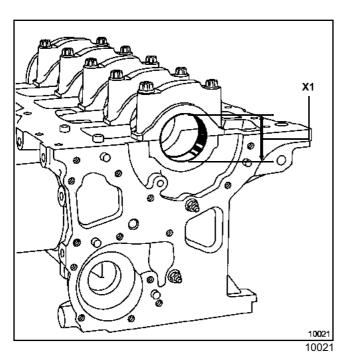
☐ Apply:

- two beads (4) of RHODORSEAL 56612 mm in width to bearing no. 5 on the cylinder head,
- two beads (5) of **RHODORSEAL 5661** to bearing no. 1 on the cylinder head
- ☐ Apply a blob of oil to the camshaft bearings.

Lower engine: Check

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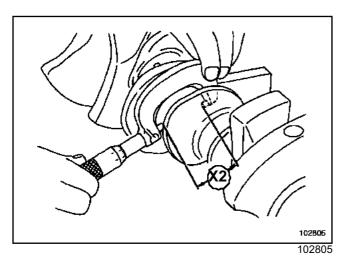
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740



- Measure the internal diameter of crankshaft bearings (X1) which should be between 47.612 and 47.625 mm.
- ☐ Remove the crankshaft bearing caps.

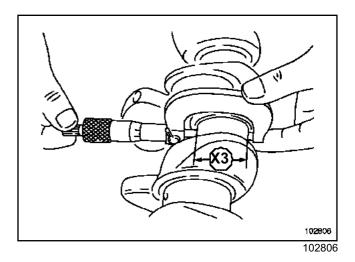
II - CRANKSHAFT CHECK

1 - Measuring the journal diameters



■ Measure the diameter of crankshaft bushings (X2) which should be 44 ± 0.01 mm.

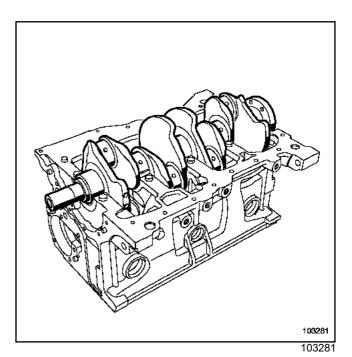
2 - Measuring the crankpin diameter



☐ The diameter of crankpins (X3) must be between 39.984 and 40 mm.

3 - Checking the crankshaft diameter clearance

 □ Refit the crankshaft bearing shells using (Mot. 1493-02) (see 10A, Engine and peripherals, Rotating parts: Refitting).



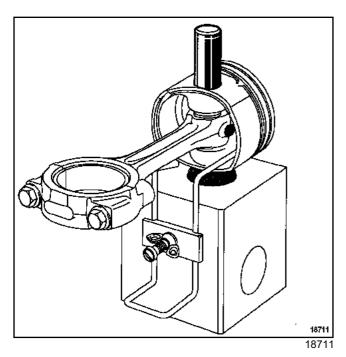
Note:

Never turn the crankshaft during the operation.

- ☐ Remove any oil that may be on the crankshaft journals and cylinder block bearings.
- ☐ Refit the crankshaft.

ENGINE AND LOWER ENGINE ASSEMBLY Running gear Refitting

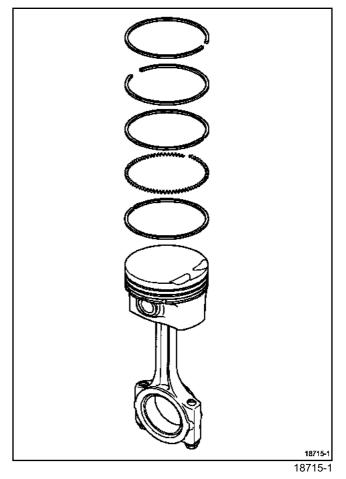
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740



- When the solder reaches welding point (becomes liquid):
 - wipe off the solder,
 - -insert the locator into the piston,
 - -insert the con rod (correctly positioned) in the piston.
 - quickly drive in the gudgeon pin until the locator reaches the end of the support base.
- ☐ Ensure that the gudgeon pin remains withdrawn from the piston diameter for all con rod positions in the piston.

V - REFITTING THE PISTON RINGS

- ☐ The piston rings, at their original settings, must be free in their grooves.
- ☐ Ensure the rings are fitted in the correct direction, with the word TOP facing upwards.



- □ Observe the gap and direction of fitting for each piston ring.
- ☐ Refit the piston rings using a **Circlip pliers**.

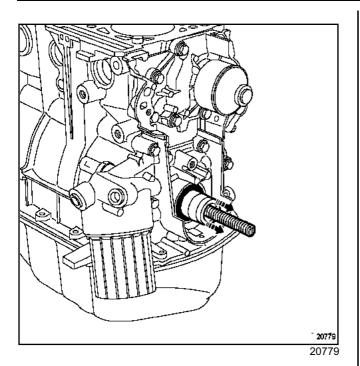
VI - REFITTING THE PISTONS AND CON RODS

- ☐ Before fitting, oil:
 - the cylinder block barrels,
 - the piston rings,
 - the piston skirts,
 - the crankshaft crankpins.

Cylinder block: Refitting

10A

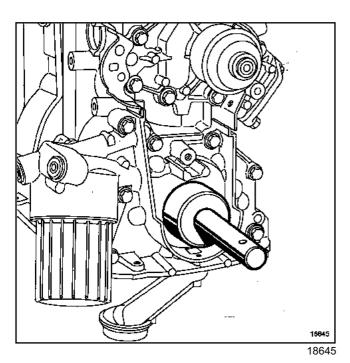
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740



□ Remove:

- -the nut,
- -the cover,
- -the protector,
- the threaded rod.

b - Old elastomer seal

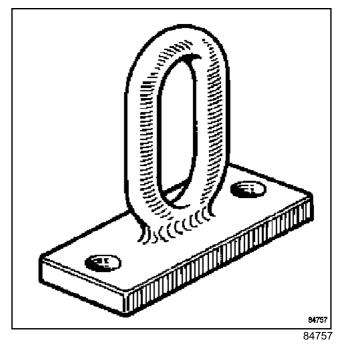


☐ Refit the seal on the oil pump side using tool (Mot. 1355).

3 - FLYWHEEL END

WARNING

It is essential to remove the engine from its mounting to refit the seal at the flywheel end.

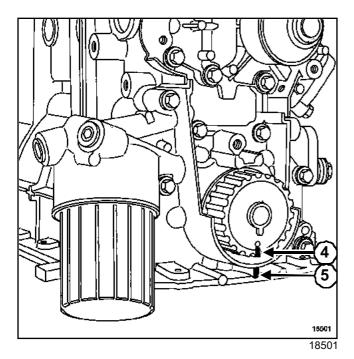


- ☐ Fit tool (Mot. 923) on the cylinder block sealing surface.
- ☐ Remove the engine from its mounting using **Jacking point**.

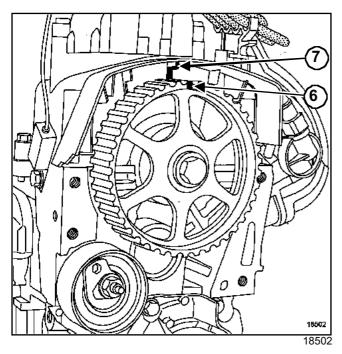
Timing - cylinder head: Refitting

10A

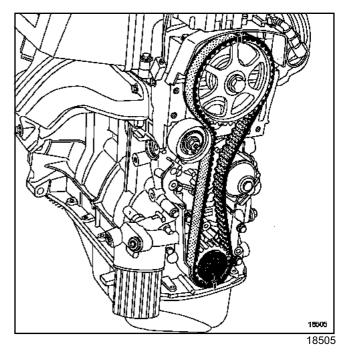
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740



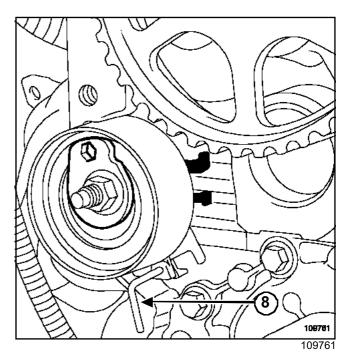
☐ The crankshaft sprocket (4) should be aligned at fixed mark (5) on the oil pump body.



- ☐ Refit the rocker cover with four mounting bolts (to check the alignment with the camshaft pulley).
- ☐ Align the camshaft pulley mark (6) with fixed mark (7) on the rocker cover using tool (Mot. 799-01).



- ☐ Fit the crankshaft accessories pulley and its retaining washer.
- ☐ Torque tighten the crankshaft accessories pulley to 15 Nm
- ☐ Fit the timing belt aligning the belt marks with the crankshaft sprocket and the camshaft pulley.
- ☐ Remove the TDC pin (Mot. 1054).



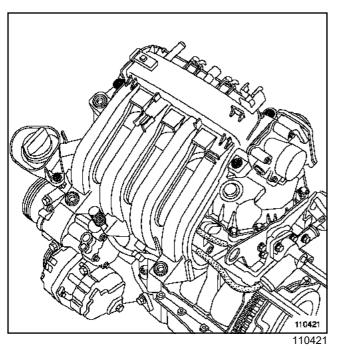
☐ Remove the timing tensioner wheel pin (8).

Timing - cylinder head: Refitting

10A

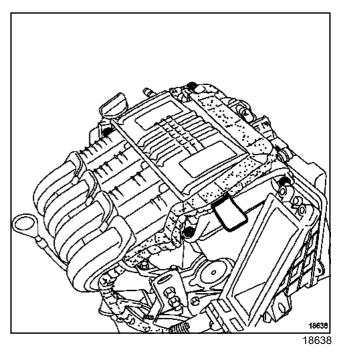
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740

D4F, and 708 or 722 or 740



☐ Cross tighten to torque the inlet manifold / rocker cover bolts (8 Nm).

D4D, and 712 – D4F, and 702 or 706 or 712 or 714 or 716 or 728 or 730



☐ Cross tighten to torque the inlet manifold / rocker cover bolts to 8 Nm.

Engine: Refitting



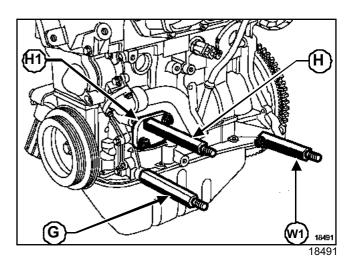
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740

Essential special tooling		
Mot. 792-03	Engine mounting plate for Desvil stand	
Mot. 1360-01	W1 pin, replaces W pin of Mot.1360.	
Mot. 1715	Belt tension setting tool (frequency meter)	
Mot. 1505	Belt tension setting tool (frequency meter)	

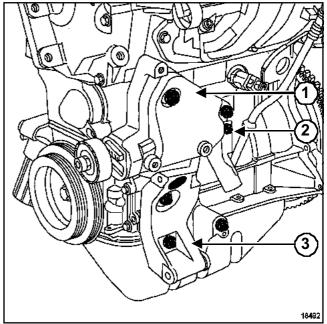
Tightening torques ▽	
air conditioning com- pressor bolts	25 Nm
coolant inlet pipe bolt	10 Nm
alternator mounting bolt	25 Nm
air conditioning com- pressor bolts	50 Nm
power assisted steering mounting bolts	25 Nm
power assisted steering pump bolt	22 Nm
alternator upper bolt	25 Nm
alternator lower moun- ting bolt	50 Nm
tension wheel bolts	37 Nm

I -ENGINE SECURED BY THE ACCESSORIES END

☐ Remove the engine from the support (Mot. 792-03).



□ Remove the studs G,H and W1 and the plate H1 of tool (Mot. 1360-01) (including the rod W1 and the plate H1).



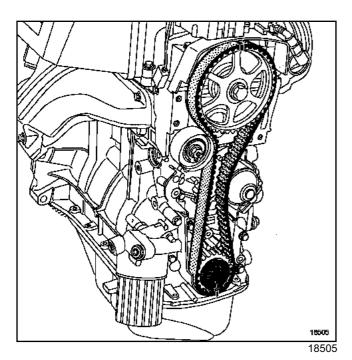
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- ☐ Refit:
 - the coolant inlet pipe with a new O-ring,
 - the air conditioning compressor mounting (1).
- ☐ Tighten to torque.
- ☐ Tighten to torque:
 - the air conditioning compressor bolts (25 Nm),
 - the coolant inlet pipe bolt (10 Nm) at (2).
- ☐ Refit the alternator mounting (3).
- ☐ Tighten to torque the alternator mounting bolt (25 Nm).

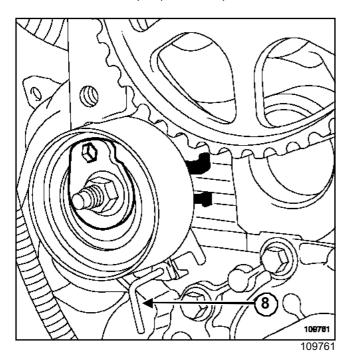
Timing belts: Refitting

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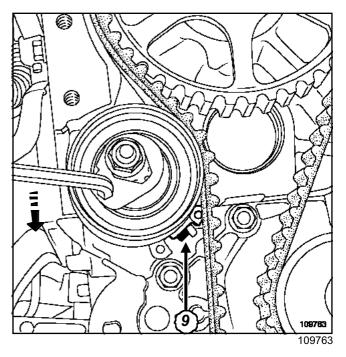
D4D, and 700 or 712 or 720 – D4F, and 702 or 706 or 708 or 712 or 714 or 716 or 722 or 728 or 730 or 740



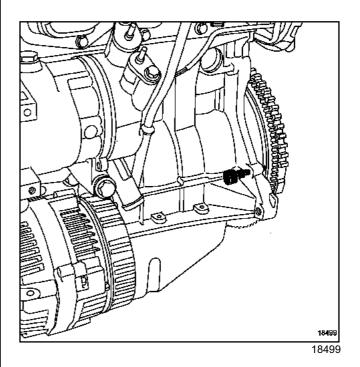
- ☐ Fit the crankshaft accessories pulley and its retaining washer.
- ☐ Torque tighten the crankshaft accessories pulley to 15 Nm
- ☐ Fit the timing belt aligning the belt marks with the crankshaft sprocket and the camshaft pulley.
- ☐ Remove the TDC pin (Mot. 1054).



☐ Remove the timing tensioner wheel pin. (8)



- ☐ Turn the tensioner wheel eccentric using a **6 mm** Allen key in an anti-clockwise direction.
- ☐ Move the moving tensioner wheel index (9) to the position indicated above.
- ☐ Tighten to torque the **timing tensioner**, **(24 Nm)**.
- ☐ Rotate the crankshaft through six revolutions in a clockwise direction (timing side).



- ☐ Insert the TDC pin (Mot. 1054).
- ☐ Turn the crankshaft to the setting point.