

F4R

The camshaft dephaser control solenoid valve is controlled if the following conditions are met:

- no speed sensor fault
- no camshaft position sensor fault
- no injection system faults,
- after the engine has started,
- outside idling speed and no load,
- threshold of mapping according to load and engine speed reached,
- threshold of mapping according to the coolant temperature.

TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

M4R

- ❑ The engine and gearbox assembly must be removed to remove/refit the camshaft dephaser (see **10A, Engine and cylinder block assembly, Engine - gearbox assembly: Removal - Refitting**, page **10A-113**).
- ❑ For the camshaft dephaser removal-refitting procedure (see **Timing - cylinder head: Removal**) (Technical Note 6020A, 10A, Engine and peripherals) and (see **Timing - cylinder head: Refitting**) (Technical Note 6020A, 10A, Engine and peripherals).

TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

K4M

Special tooling required

Mot. 1490-01 For locking and adjusting the camshaft pulleys.

Tightening torques

camshaft dephaser pulley bolt **100 N.m**

exhaust camshaft pulley nut **30 N.m + 84° ± 4°**

blanking cover of the camshaft dephaser **15 N.m ± 3 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION

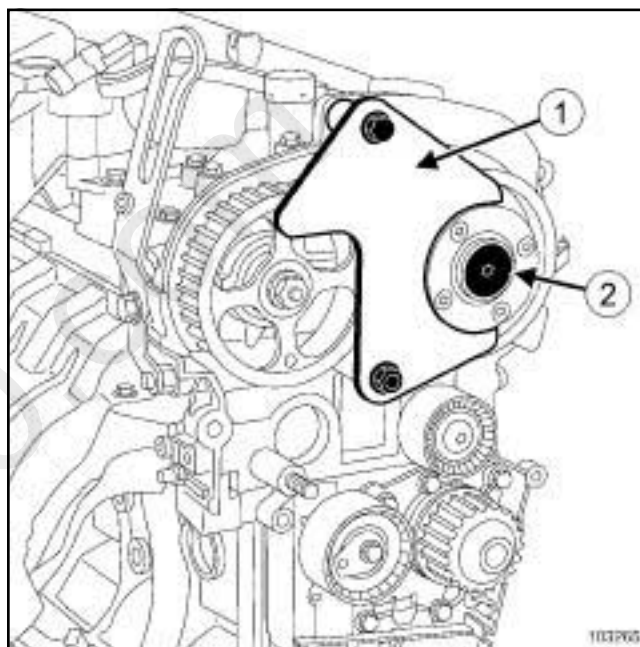
☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

☐ Remove:

- the engine undertray bolts,
- the engine undertray,
- the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery)
- the battery tray (see **Battery: Removal - Refitting**) (80A, Battery),
- the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-17) ,
- the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page 12A-33) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).
- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,

- the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page 11A-31) ,
- the right-hand suspended engine mounting (see **19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page 19D-22) ,
- the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



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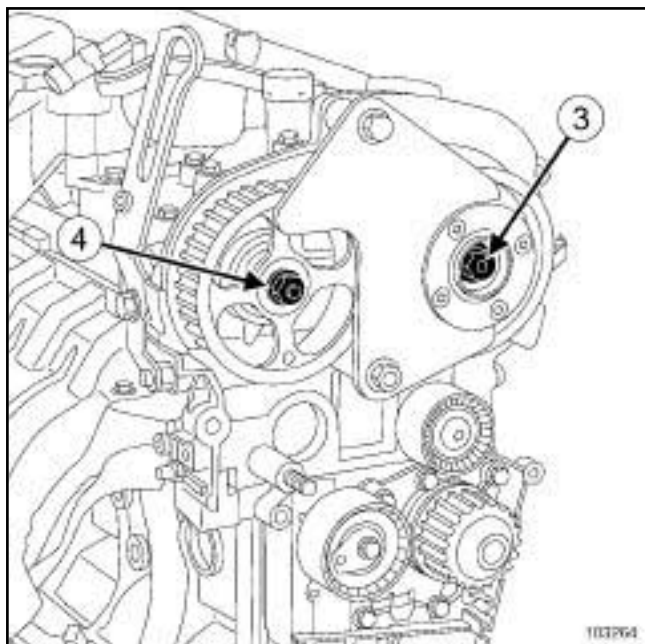
- ☐ Position the **(Mot. 1490-01)** (1) .
- ☐ Remove the camshaft dephaser blanking cover (2) .

TOP AND FRONT OF ENGINE

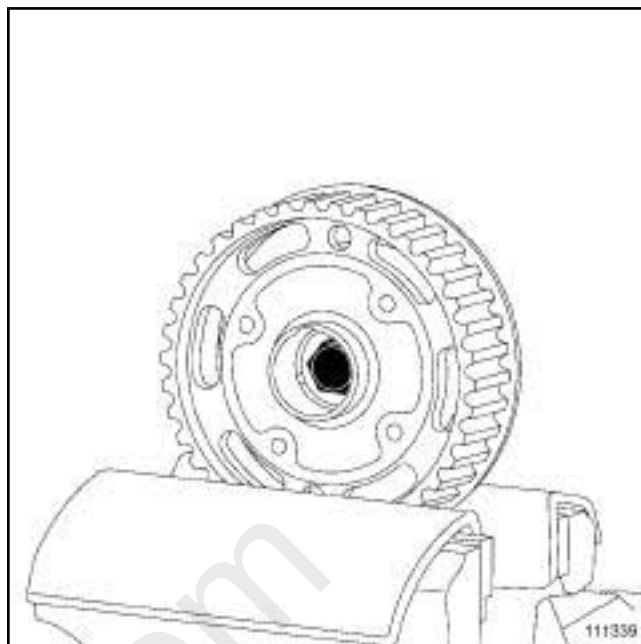
Camshaft dephaser: Removal - Refitting

11A

K4M



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❑ Remove:

- the bolt (3) from the camshaft pulley dephaser,
- the exhaust camshaft pulley nut (4) ,
- the (Mot. 1490-01),
- the exhaust camshaft pulley.
- the camshaft dephaser pulley.

REFITTING

I - REFITTING PREPARATION OPERATION

- ❑ parts always to be replaced: Exhaust camshaft pulley nut (10,02,02,13).
- ❑ parts always to be replaced: Camshaft dephaser sprocket bolt (10,02,02,06).

WARNING

Failure to adhere to the following procedure may cause the timing belt to be incorrectly timed.

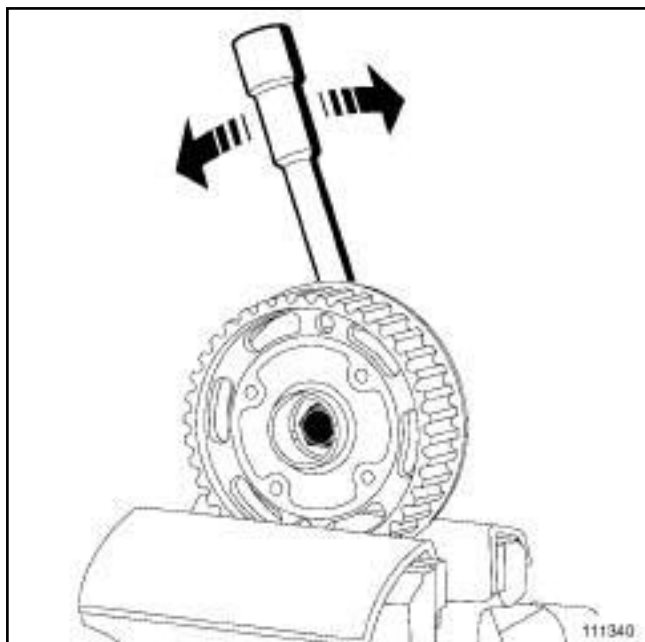
- ❑ If fitting a new camshaft dephaser, check that it is locked by following the procedure described below.
- ❑ Fit a stud to the camshaft dephaser hub and tighten it.

TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

K4M



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- ☐ Mechanically lock the camshaft dephaser by rotating it to the left or right using a tubular hexagon box spanner.
- ☐ Check that the camshaft dephaser is correctly locked (no rotation of the hub in relation to the wheel to the left or right).
- ☐ If there is a rotation of the hub in relation to the wheel, the camshaft dephaser is faulty and must be replaced.
- ☐ Degrease the end of the inlet camshaft (timing end) and clean the bores and bearing faces of the camshaft dephaser.

II - REFITTING OPERATION FOR PART CONCERNED

- ☐ Refit:
 - the exhaust camshaft pulley.
 - the camshaft dephaser pulley,
 - a new nut on the exhaust camshaft pulley,
 - a new bolt on the camshaft dephaser pulley.
- ☐ Position the tool (**Mot. 1490-01**) on the camshaft pulleys.
- ☐ Tighten to torque:
 - the **camshaft dephaser pulley bolt (100 N.m)**,
 - the **exhaust camshaft pulley nut (30 N.m + 84° ± 4°)**.
- ☐ Fit a new blanking cover on the camshaft dephaser.

- ☐ Torque tighten the **blanking cover of the camshaft dephaser (15 N.m ± 3 N.m)**.

- ☐ Remove the (**Mot. 1490-01**).

III - FINAL OPERATION

- ☐ Refit:
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page **11A-48**) ,
 - the right-hand suspended engine mounting (see **19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page **19D-22**) ,
 - the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page **11A-31**) ,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) ,
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
 - the throttle valve (see **12A, Fuel mixture, Throttle valve: Removal - Refitting**, page **12A-33**) ,
 - the air filter unit (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page **12A-17**) ,
 - the battery tray (see **Battery: Removal - Refitting**) (80A, Battery),
 - the battery (see **Battery: Removal - Refitting**) (80A, Battery)
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (56A, Exterior equipment),
 - the windscreen wiper arms (see **Windscreen wiper arm: Removal - Refitting**) (85A, Wiping - Washing),
 - the engine undertray.

TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

F4R

Special tooling required	
Mot. 1453	Engine anchorage support with multiple adjustments and retaining straps.
Mot. 1453-01	Additional handle nut for engine lifting support tool Mot. 1453.
Mot. 1496	Camshaft timing tool.
Mot. 1054	TDC setting pin.
Mot. 1801	Camshaft sprocket locking tool F4 engines.
Mot. 1509-01	Adapter kit for tool Mot.1509 or Mot.1801

Tightening torques 	
toothed sprocket nuts	80 Nm
old inlet camshaft dephaser bolt	30 Nm

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 392, 02A, Lifting equipment).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).
- ☐ Remove:
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 393, 56A, Exterior equipment),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 393, 56A, Exterior equipment),
 - the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery),
 - the air filter box (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page 12A-17) ,
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (MR 392, 35A, Wheels and tyres),
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 393, 55A, Exterior protection),

- the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page 11A-5) ,

- the engine undertray.

- ☐ Fit the timing end lifting eye (see **11A, Top and front of engine, Lifting eyes: Removal - Refitting**, page 11A-305) .
- ☐ Fit the **(Mot. 1453)** fitted with the **(Mot. 1453-01)**.
- ☐ Remove the right-hand suspended mounting support (see **19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page 19D-22) .
- ☐ Remove the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) .

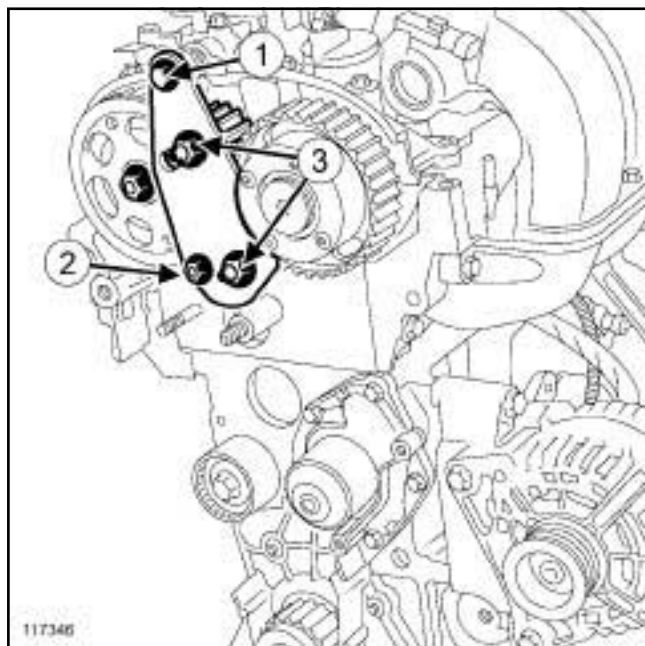
TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

F4R

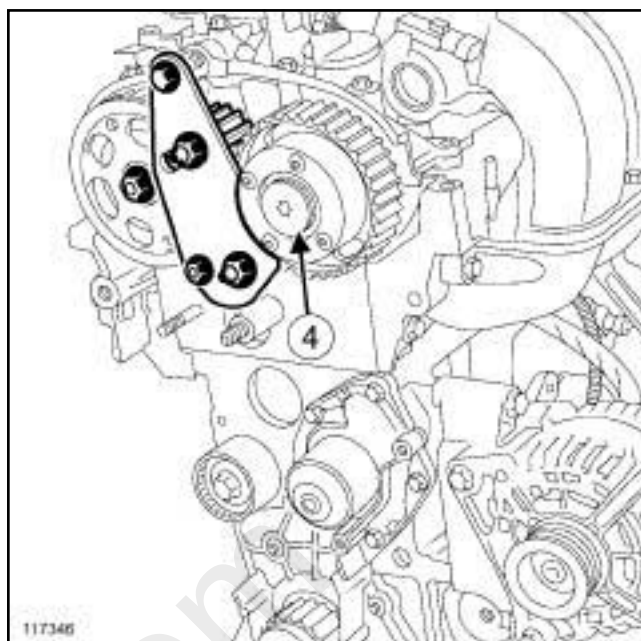
II - OPERATION FOR REMOVAL OF PART CONCERNED



- ☐ Check that camshaft setting tool (**Mot. 1496**) is still in place.
- ☐ Check that the TDC pin (**Mot. 1054**) is still in place and that the crankshaft is set.
- ☐ Fit:
 - the (**Mot. 1801**) fitted with the sprocket (**Mot. 1509-01**),
 - the upper bolt (1) on the upper timing cover and the collar nut (2) .
- ☐ Tighten the upper bolt on the upper timing cover and the collar nut.
- ☐ Bring the toothed sprockets of the tool into contact with the camshaft pulleys.
- ☐ Torque tighten the **toothed sprocket nuts (80 Nm)** (3) .

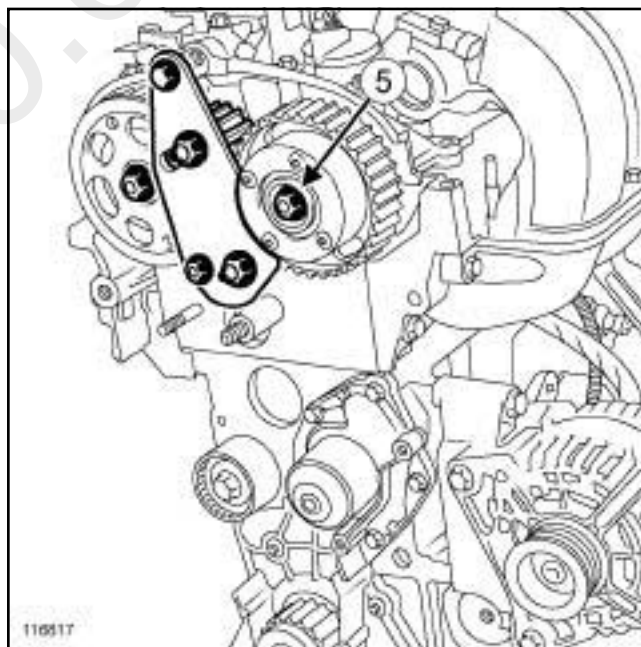
Note:

Beware of oil running out when removing the blanking cover from the camshaft dephaser and when removing the camshaft dephaser.



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- ☐ Remove the inlet camshaft dephaser blanking cover (4) .



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- ☐ Remove:
 - the inlet camshaft dephaser bolt (5) ,
 - the (**Mot. 1801**) fitted with the sprocket (**Mot. 1509-01**),
 - the inlet camshaft dephaser.

F4R

REFITTING

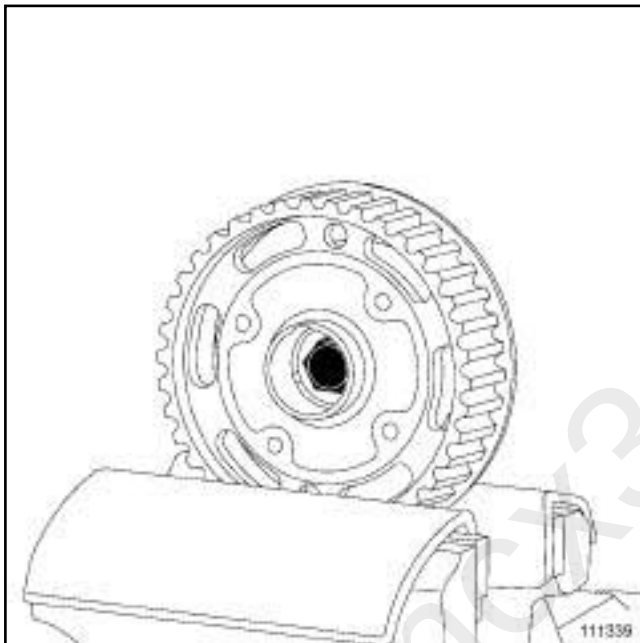
I - REFITTING PREPARATIONS OPERATION

❑

WARNING

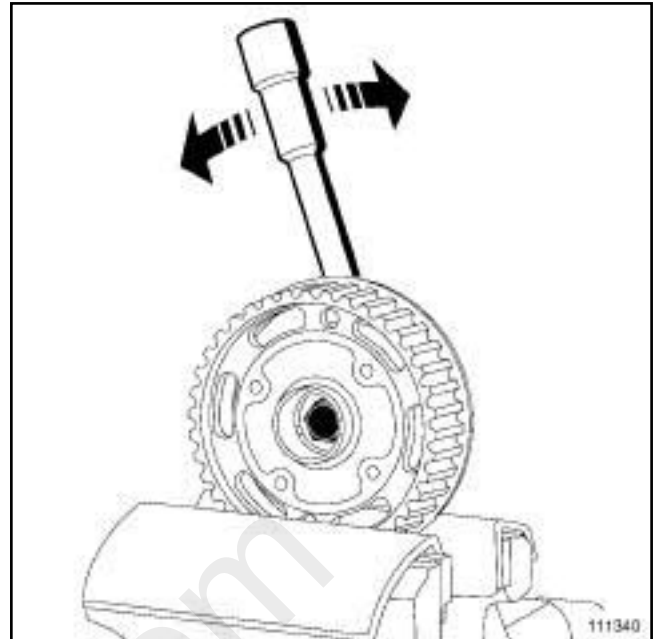
Failure to observe the following procedure can lead to the destruction of the engine.

- ❑ If fitting a new inlet camshaft dephaser, check that it is locked by following the procedure described below:
- ❑ Fit a stud in the dephaser hub and tighten it.



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- ❑ Place the inlet camshaft dephaser in a vice fitted with jaws.



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- ❑ Mechanically lock the dephaser by rotating it to the left or to the right using a tubular hexagon box spanner.
- ❑ Check that the inlet camshaft dephaser is correctly locked (no rotation of the hub in relation to the wheel to the left or right).
- ❑ If there is a rotation of the hub in relation to the wheel, the camshaft dephaser is faulty and must be replaced.
- ❑ Grease the end of the inlet camshaft (timing end) and clean the bores and bearing faces of the inlet camshaft dephaser.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the inlet camshaft dephaser,
- the old inlet camshaft dephaser bolt.

- ❑ Tighten to torque the **old inlet camshaft dephaser bolt (30 Nm)**.

III - FINAL OPERATION.

❑ Refit:

- the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting, page 11A-48**) ,
- the right-hand suspended mounting support (see **19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting, page 19D-22**) .

TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

F4R

☐ Remove:

- the **(Mot. 1453)** fitted with the **(Mot. 1453-01)**,
- the lifting eye on the timing end (see **11A, Top and front of engine, Lifting eyes: Removal - Refitting**, page **11A-305**) .

☐ Refit:

- the engine undertray,
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) ,
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 393, 55A, Exterior protection),
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (MR 392, 35A, Wheels and tyres),
 - the air filter box (see **12A, Fuel mixture, Air filter unit: Removal - Refitting**, page **12A-17**) ,
 - the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery),
 - the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 393, 56A, Exterior equipment),
 - the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 393, 56A, Exterior equipment).
- ☐ Connect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).

TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

D4F, and 764

Special tooling required

Mot. 1672 Lower engine support.

Mot. 1054 TDC setting pin.

Tightening torques

camshaft dephaser bolt **75 Nm**

camshaft dephaser blanking cover **15 Nm**

lower timing cover bolt **10 Nm**

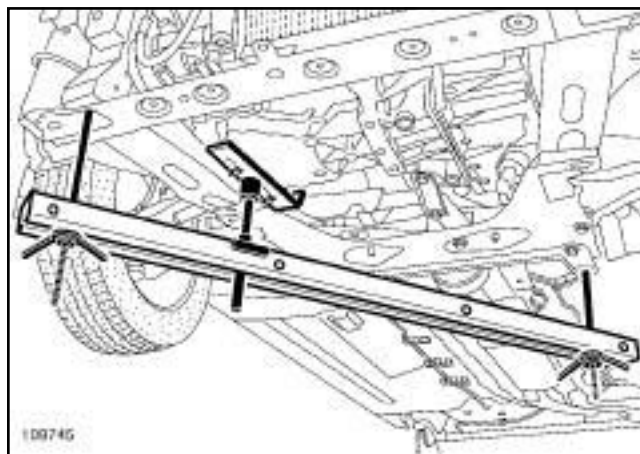
timing intermediate housing bolts **10 Nm**

upper timing cover bolts **33 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

- ☐ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 392, 02A, Lifting equipment).
- ☐ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 392, 80A, Battery).
- ☐ Remove:
 - the front right-hand wheel (see **Wheel: Removal - Refitting**) (MR 392, 35A, Wheels and tyres),
 - the front right-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 393, 55A, Exterior protection),
 - the accessories belt (see **11A, Top and front of engine, Accessories belt: Removal - Refitting**, page **11A-5**) .



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- ☐ Fit the engine support tool (**Mot. 1672**) under the lower cover.
- ☐ Remove the right-hand suspended engine mounting (see **19D, Engine mounting, Right-hand suspended engine mounting: Removal - Refitting**, page **19D-22**) .



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- ☐ Remove:
 - the bolts (1) from the upper timing cover,
 - the upper timing cover,
 - the bolts (2) from the timing intermediate housing,
 - the timing intermediate housing,
 - the crankshaft accessories pulley (see **11A, Top and front of engine, Crankshaft accessories pulley: Removal - Refitting**, page **11A-31**) .

TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

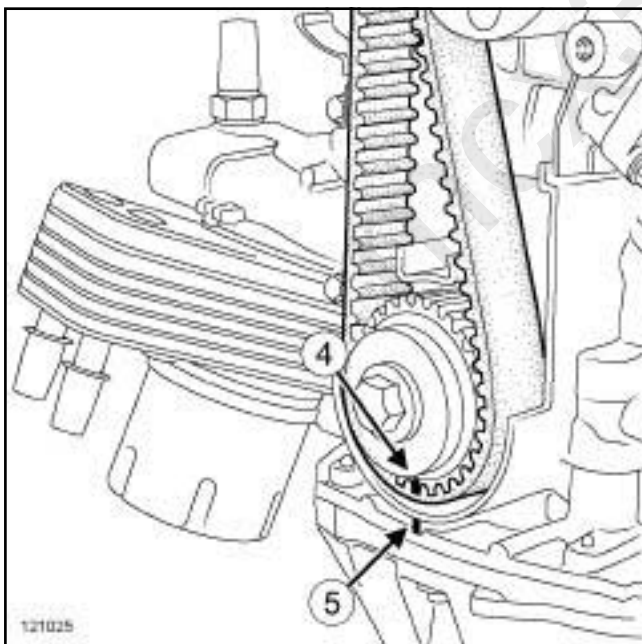
D4F, and 764



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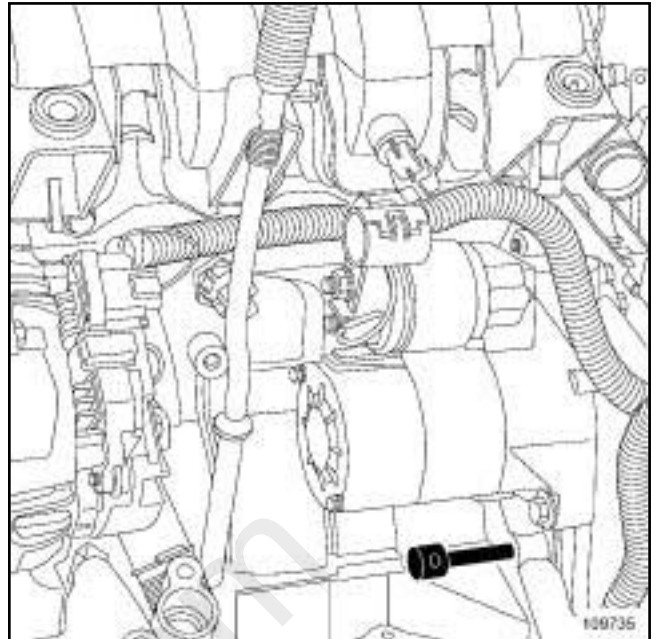
Remove:

- the lower timing cover bolt (3) ,
- the lower timing cover.



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- Refit the crankshaft accessories pulley bolt and its retaining washer.
- Turn the crankshaft clockwise (timing end) to position the crankshaft sprocket marking (4) half a tooth in front of the alignment of the fixed marking (5) on the oil pump casing.



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Insert (Mot. 1054).

- Turn the crankshaft clockwise until it is stopped.

II - OPERATION FOR REMOVAL OF PART CONCERNED

1 - Dephaser removal with timing belt present

Note:

Note:

With the timing belt present, use it to loosen then torque tighten the camshaft dephaser bolt.

- Remove the camshaft dephaser blanking cover.
- Undo the camshaft dephaser bolt.
- Remove:
 - the timing belt (see 11A, Top and front of engine, Timing belt: Removal - Refitting, page 11A-48) ,
 - the camshaft dephaser bolt,
 - the camshaft dephaser.

TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

11A

D4F, and 764

2 - Dephaser removal without timing belt



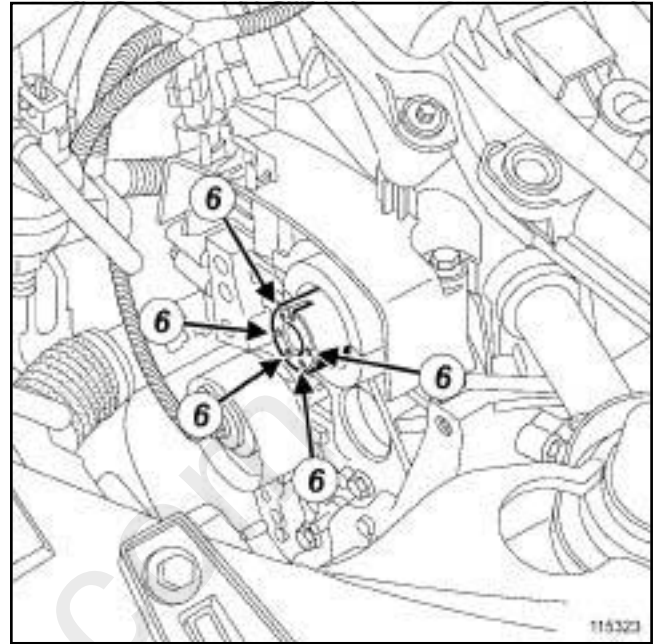
Note:

If the timing belt is missing or broken, without damage to the engine, a used timing belt must be fitted before carrying out this procedure, to allow the dephaser bolt to be loosened then tightened.

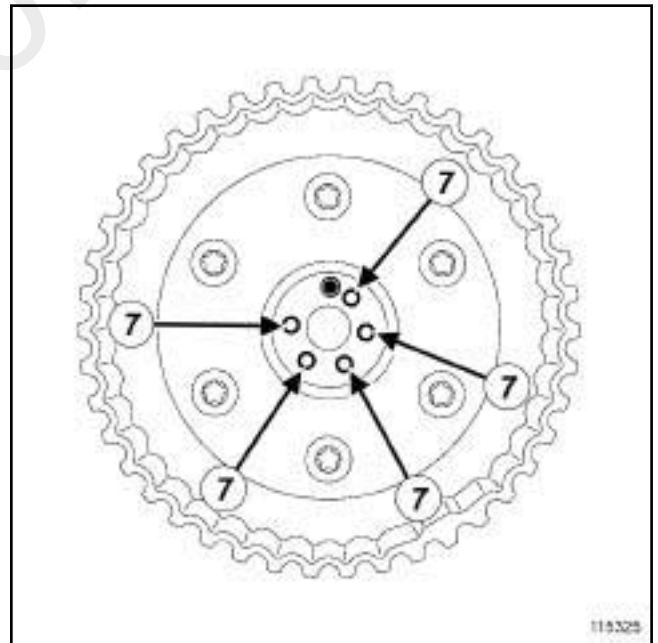
- Refit the used timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page **11A-48**) .
- Remove the camshaft dephaser blanking cover.
- Undo the camshaft dephaser bolt.
- Remove:
 - the timing belt (see **11A, Top and front of engine, Timing belt: Removal - Refitting**, page **11A-48**) ,
 - the camshaft dephaser bolt,
 - the camshaft dephaser.

REFITTING

I - REFITTING PREPARATIONS OPERATION



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□ Check:

- that the camshaft dephaser wheel is correctly locked (wheel does not rotate right or left),
- that the camshaft dephaser bearing face is clean and in good condition,
- that there are no foreign bodies in the camshaft oil ducts (6) and in the camshaft dephaser oil ducts (7)

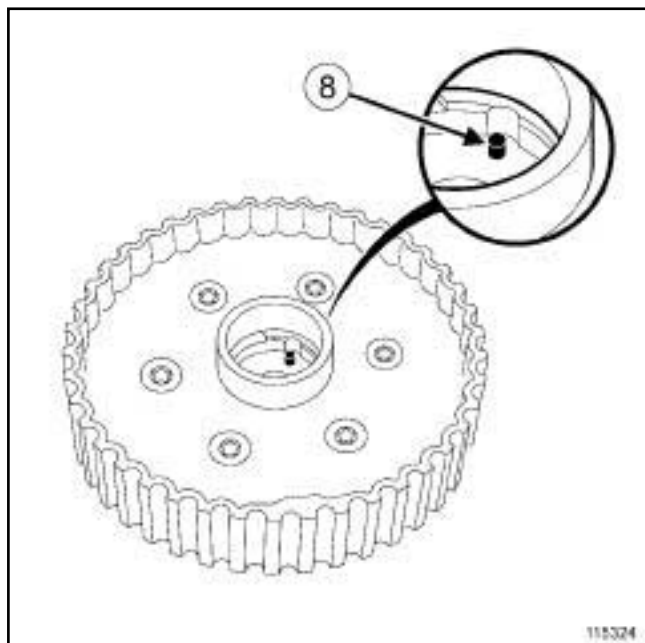
TOP AND FRONT OF ENGINE

Camshaft dephaser: Removal - Refitting

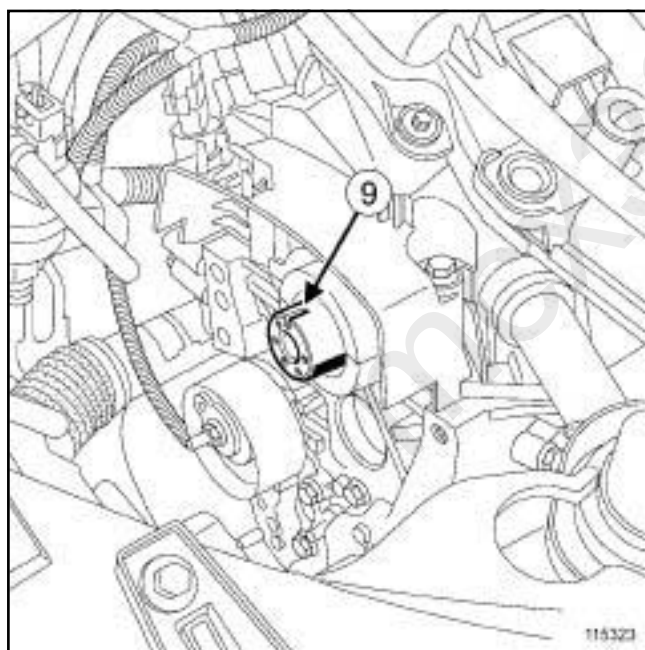
11A

D4F, and 764

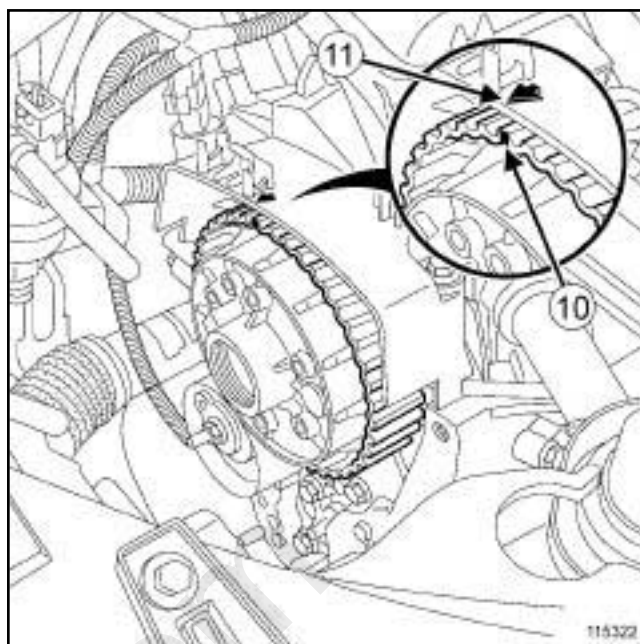
II - REFITTING OPERATION FOR PART CONCERNED



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- ☐ Fit the camshaft dephaser.

Note:

Check that the camshaft dephaser is correctly positioned in relation to the camshaft:

- the oil ducts should match,
- the dephaser spigot (8) should fit into the camshaft groove (9) ,
- the mark (10) on the camshaft dephaser and the fixed marking (11) must be aligned.

Failure to respect these instructions could result in destruction of the engine.

- ☐ Refit:

- the camshaft dephaser bolt,
- a used timing belt (see 11A, **Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) .

Note:

The **(Mot. 1054)** must be in place.

- ☐ Torque tighten the **camshaft dephaser bolt (75 Nm)**.
- ☐ Remove the used timing belt (see 11A, **Top and front of engine, Timing belt: Removal - Refitting**, page 11A-48) .