ENGINE AND PERIPHERALS
Section View

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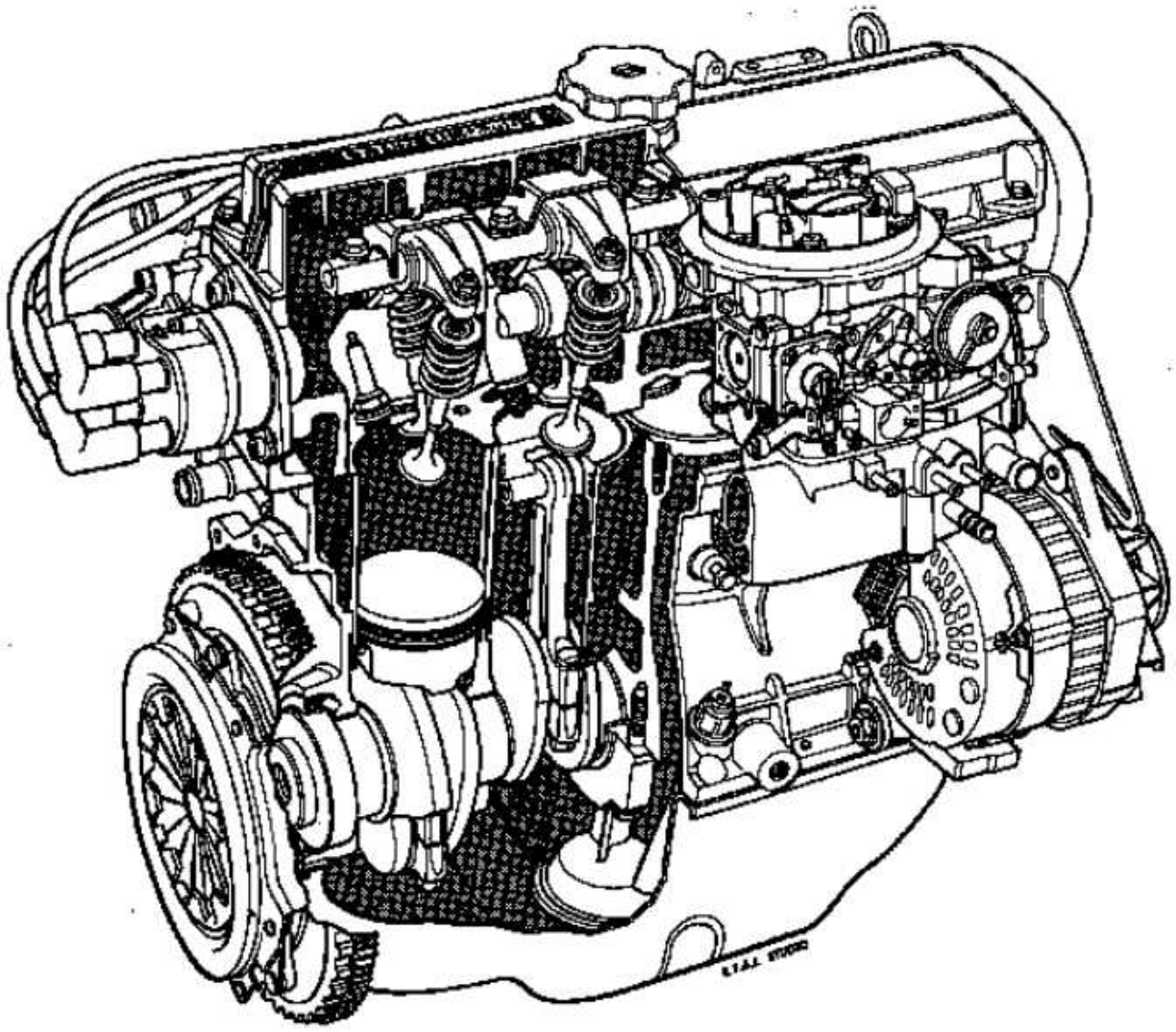

D1042

ENGINE AND PERIPHERALS
Engine identification

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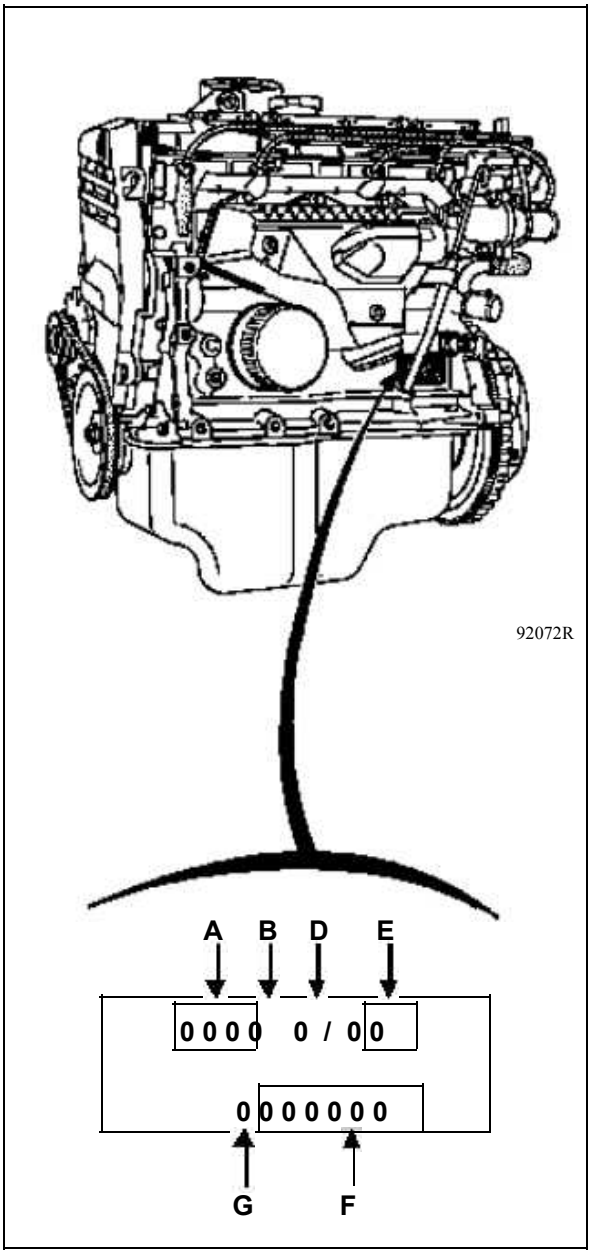
The engine is identified by a plate riveted onto the cylinder block.



It shows:

A: The engine type

B: The homologation letter

D: The identity of RENAULT SA

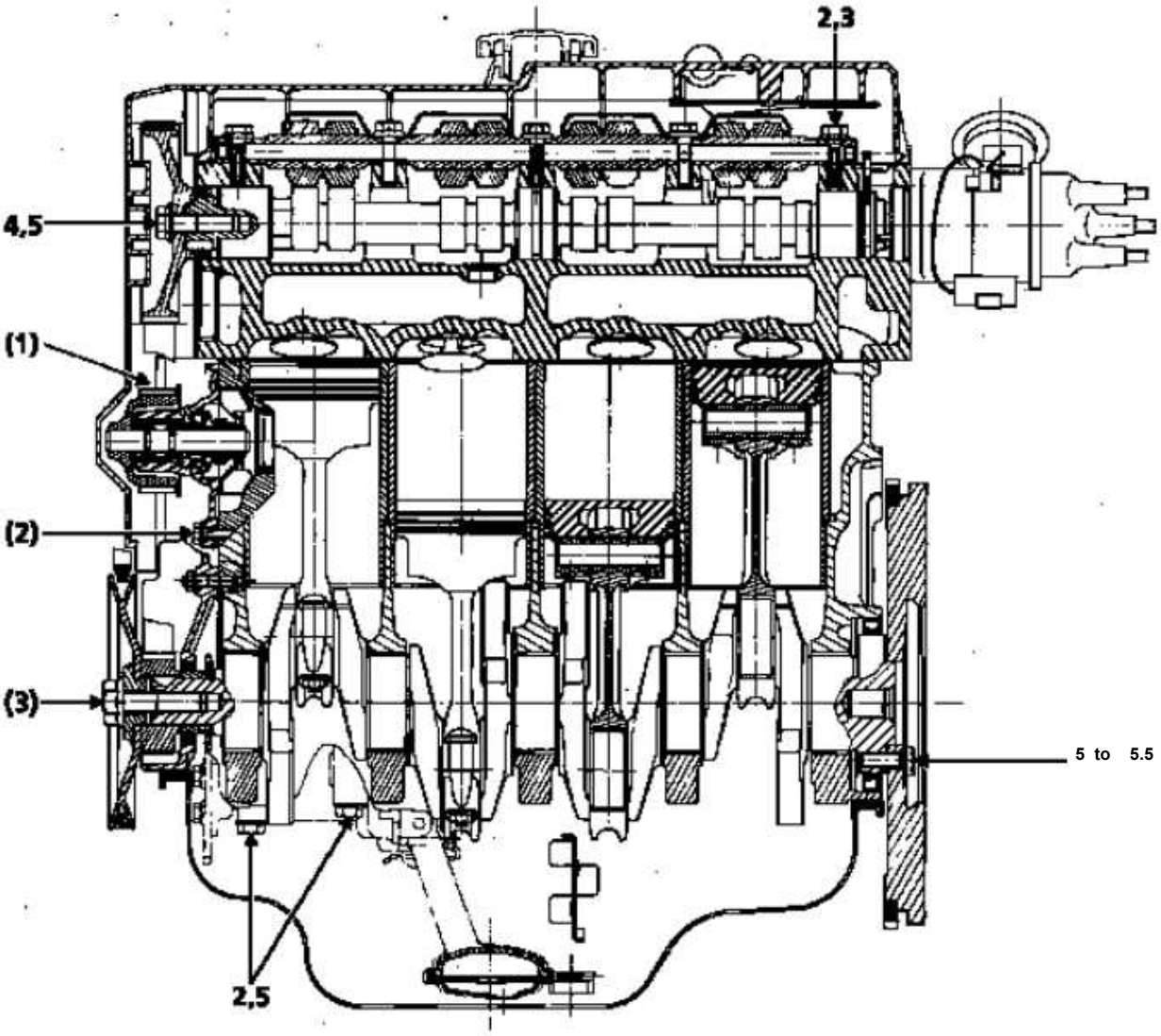
E: The engine suffix

G: The assembled engine factory reference

F: The engine fabrication number

ENGINE AND PERIPHERALS
Section and tightening torques(in daN.m and/or°)

10



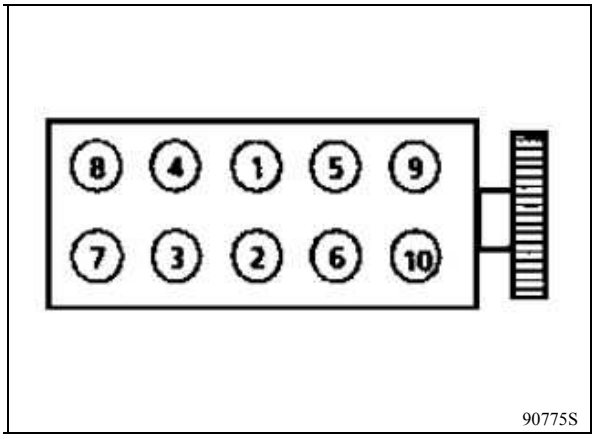
(1) Timing tension wheel nut: tighten to **5 daN.m**
(2) **M6** bolt and nut: tighten to **1 daN.m**
M8 bolt: tighten to **2.2 daN.m**
(3) Pre-tighten to **2 daN.m,** then angle tighten by **68°** ± **6°**

ENGINE AND PERIPHERALS
Specifications

10

CYLINDER HEAD

All the cylinder head bolts must be replaced systematically after removal.
Lubricate the threads and under all the bolt heads with engine oil.



METHOD OF TIGHTENING CYLINDER HEAD

Preseating the gasket

Initial tightening to **2 daN.m** followed by **angular tightening of 97° ± 2°** in the recommended order :
- tightening of **bolts 1-2,**
- tightening of **bolts 3-4-5-6,**
- tightening of **bolts 7-8-9-10.**

Seating of the gasket

Wait **3 minutes** for the seal to settle.

Tightening

- Slacken **bolts 1-2.**
  Re-tighten **bolts 1-2 to 2 daN.m,** then angle tighten to **97° ± 2°**.

- Slacken **bolts 3-4-5-6**.
  Re-tighten **bolts 3-4-5-6 to 2 daN.m,** then angle tighten to **97° ± 2°**.

- Slacken bolts **7-8-9-10**.
  Re-tighten **bolts 7-8-9-10 to 2 daN.m ,** then angle tighten to **97° ± 2°**.

No retightening of cylinder head.

Cylinder head gasket

Thickness of cylinder head gasket (mm): **1.3± 0.06**
(value for a compressed gasket)

ENGINE AND PERIPHERALS
Specifications

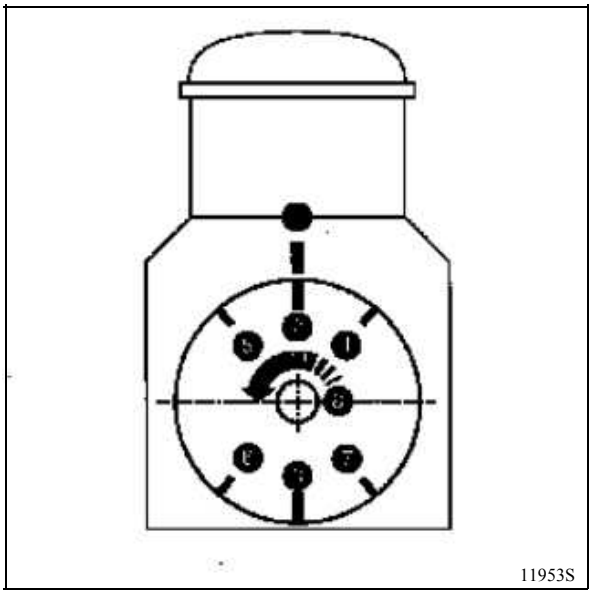
10

Timing diagram: (cannot be checked)

	E5F 710 - 716 **E7F** 700 - 704 - 706 - 730 **E7J** 624 - 718 - 719 - 720	**E6J** 700 - 701 - 706 - 712 - 713 - 718 - 734 738 - 760 **E7J** 601- 700 - 706 - 710 - 711 - 716 - 724 726 - 728 - 742 - 745 754 - 756 - 757 - 764 770 - 771 - 773	**E7F** 708 - 750
Inlet Opening Retard (IOR) *	- 2	- 6	- 4
Inlet Closing Retard (ICR)	39	43	30
Exhaust Opening Advance (EOA)	48	44	40
Exhaust Closing Advance (ECA) **	- 7	- 3	- 6

* Since the Inlet Opening Retard is negative, the opening of the valve is located after TDC.

** Since the Exhaust Closing Advance is negative, the closing of the valve is located before TDC.



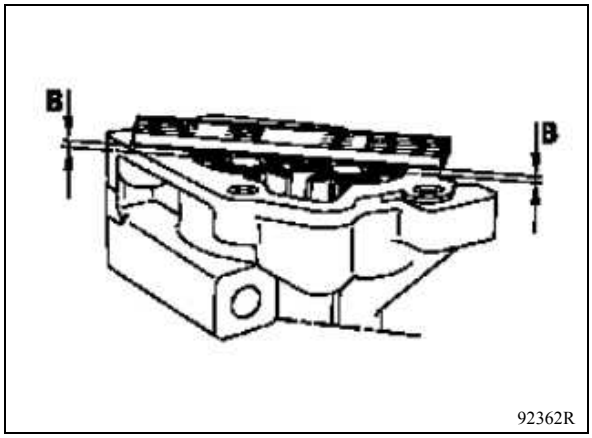
1 - Fixed mark TDC cylinder block
2 - Mobile mark flywheel TDC
3 - Mobile mark flywheel BDC
4 - Inlet Opening Retard (IOR)
5 - Exhaust Closing Advance (ECA)
6 - Inlet Closing Retard (ICR)
7 - Exhaust Opening Advance (EOA)
8 - Engine rotation direction (flywheel end)

ENGINE AND PERIPHERALS
Specifications

10

Clearance B **(in mm)** :

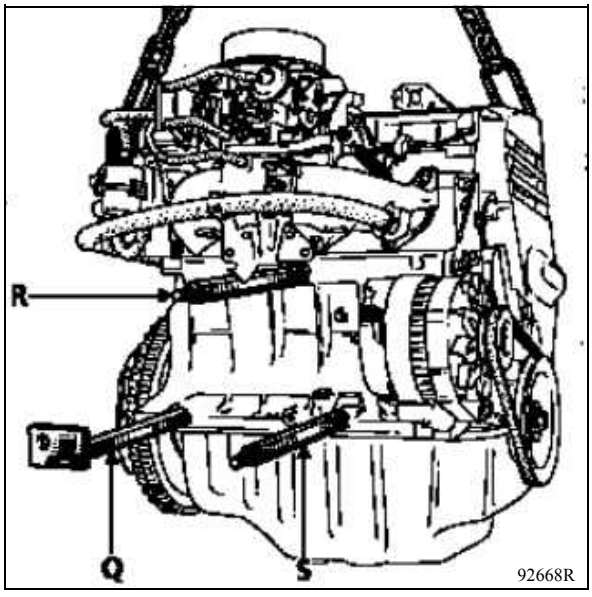
- minimum	**0.020**
- maximum	**0.086**



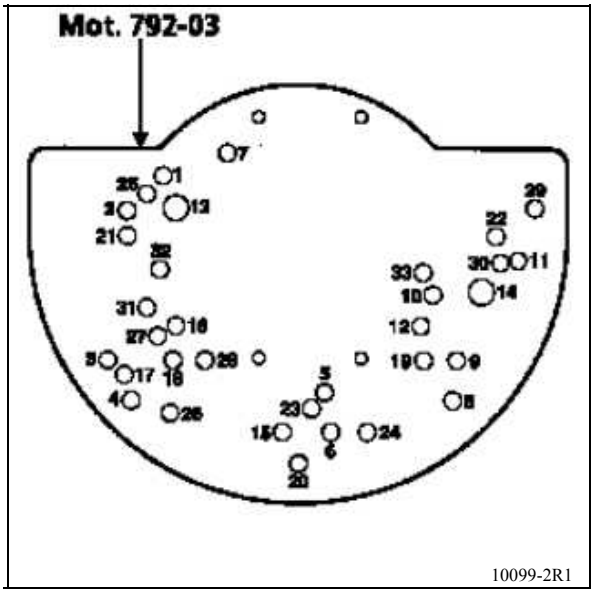
92362R

Securing engine on mounting Mot. 792-03

Rods **Mot. 1132** (**Q** ; **S** ; **R**) are secured to the cylinder block so that they fit into the holes (**12** ; **27** ; **7**) in the plate.



92668R



10099-2R1

ENGINE AND PERIPHERALS
Special tooling required

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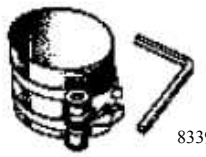
Figurine	Method Reference	Part Number	Description
 69306-1S1	**Rou. 15-01**	00 01 331 601	Protector, inside diameter **16 mm**
 83812S	**Mot. 251-01**	00 00 025 101	Dial gauge support. Used with **Mot. 252-01**
 83812S1	**Mot. 252-01**	00 00 025 201	Pressure plate for measuring cylinder liner protrusion. Used with **Mot. 251-01**.
 68666S	**Mot. 330-01**	00 00 033 001	Cylinder head support.
 10052S	**Mot. 574-22**	00 00 057 422	Tool for replacing gudgeon pins (kit)
	Mot. 574-24	00 00 057 424	Tool for fitting gudgeon pins (pin with shoulder), used in conjunction with kit **Mot. 574-22**.
 99614S	**Mot. 582-01**	00 00 058 201	Flywheel locking tool.
 77666S1	**Mot. 588**	00 00 058 800	Cylinder liner retaining flange
 77889S1	**Mot. 591-02**	00 00 059 102	Magnetised flexible tool for angular wrench for tightening cylinder head.

ENGINE AND PERIPHERALS
Essential equipment

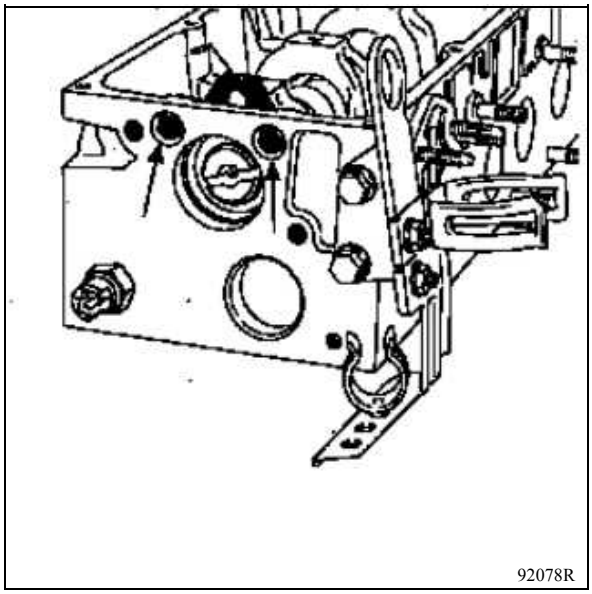
10

Description	
 83391S	Piston ring clamp (universal).
	Box of cutters for regrinding valve seats. (Example : CERGYSDIS C108 NEWAY).
	Valve lifter.
	12 mm Torx socket.

ENGINE AND PERIPHERALS
Engine repair

10

- the camshaft seal,
- the camshaft flange,


92078R

- the camshaft,
- the fuel pump (if fitted),
- the distributor with the ignition wiring loom,
- the thermostat housing,
- the spark plugs,
- the camshaft sprocket, after immobilising it with **Mot. 799-01.**

Compress the valve springs (e.g. with **FACOM** tool **U43L**).

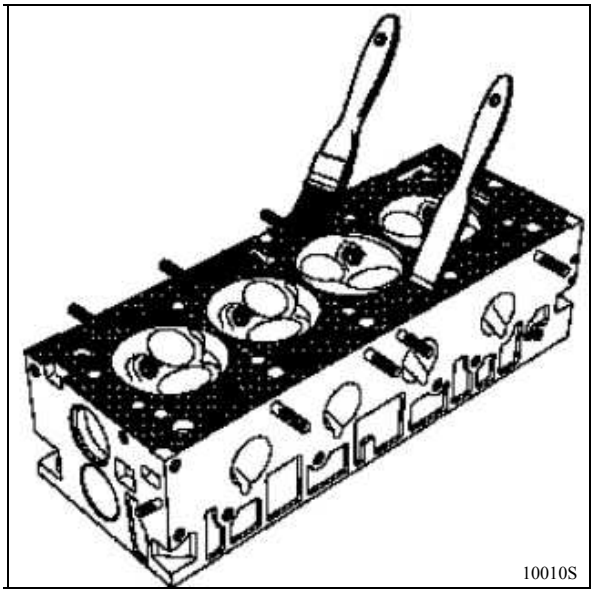
Remove the collets, the upper cups, the springs, the valves, the valve seals using the pliers **Mot. 1335** and the lower cups.

Cleaning

It is very important not to scratch the sealing faces of aluminium parts.

Use the product Decapjoint to dissolve any part of the seal which remains.

Apply the product to the part to be cleaned; wait about ten minutes, then remove it by means of a wooden spatula.


10010S

The wearing of gloves is recommended during this operation.

Do not allow any product to drip on to paintwork.

We would like to stress that the utmost care should be taken in carrying out this operation to prevent foreign bodies from penetrating the pipes feeding oil under pressure to the camshafts (pipes located both in the cylinder block and in the cylinder head) and in the oil return pipe.

Failure to follow this instruction would in fact risk blocking the nozzles of the valve rockers and quickly causing damage to the rocker cams and fingers.

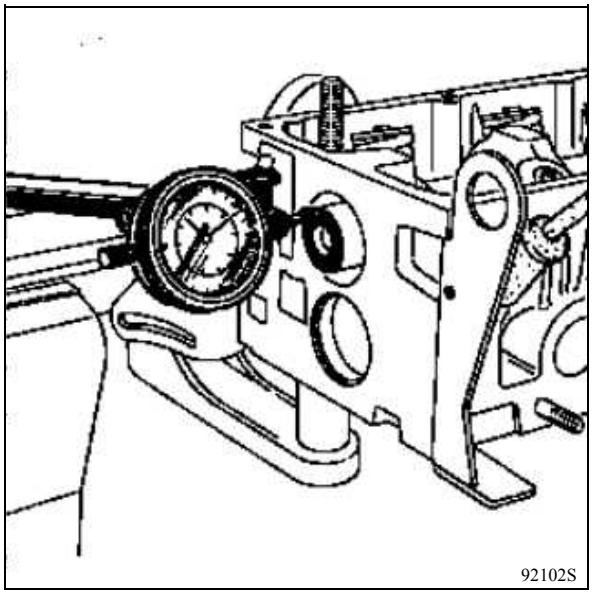
ENGINE AND PERIPHERALS
Engine repair

10

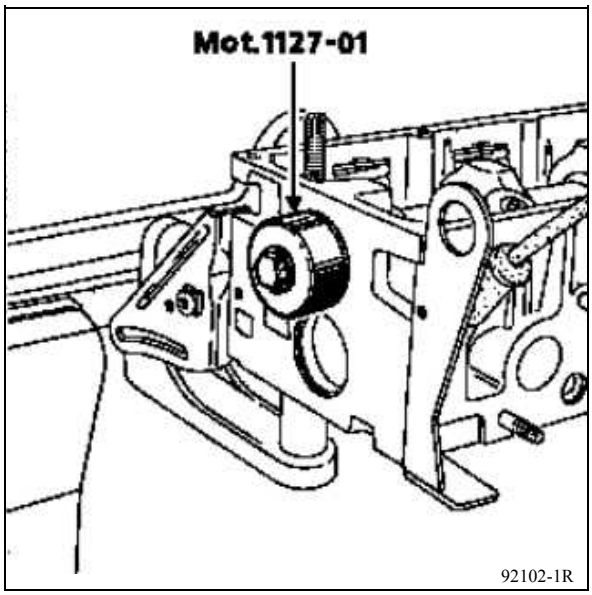
Lubricate the camshaft.

Refit the camshaft and its flange.

Check:
- the end play which should be between **0.06 and 0.015 mm**; if this is not the case, the flange or the camshaft are to blame,

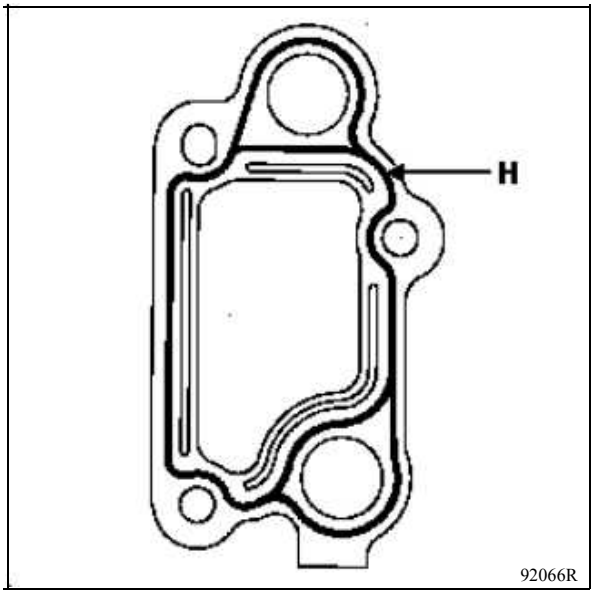

92102S

- the seal, using mounting bush **Mot. 1127-01;** this tool is designed to obtain an offset seat for the seal,



92102-1R

- the distributor with the wiring loom,
- the fuel pump (if fitted) with new seals,
- the thermostat support, making it tight with **Loctite 518**.
  The bead (H) should be **0.6 to 1 mm wide** and should be applied as shown in the diagram below,



92066R

- the camshaft sprocket, immobilising it with tool **Mot. 799-01,** and tighten the bolt to a torque value of **4.5 daN.m** (lubricate the thread and underneath the bolt head).

ENGINE AND PERIPHERALS
Engine repair

10

PREPARATION OF THE CONNECTING RODS

Visually check:
- the condition of the connecting rod (twisting - straightness),
- the bearing surface between the shells and the connecting rod bodies (if necessary, remove any burrs with a grinding wheel to obtain a correct bearing surface).

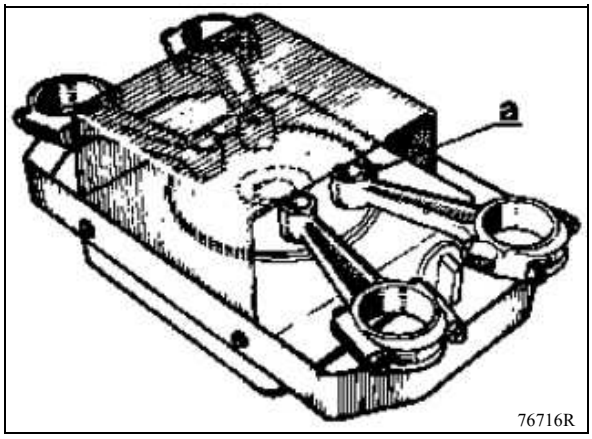
Use a **1500 W** heating plate.

Put the little ends on the heating plate.

Ensure that the whole surface of the little end is in contact with the plate.

Put a piece of self-pickling tin solder with a melting point of about **250**° onto each little end at **(a)** to act as a temperature check.

Heat the little end until the piece of self-pickling solder melts.

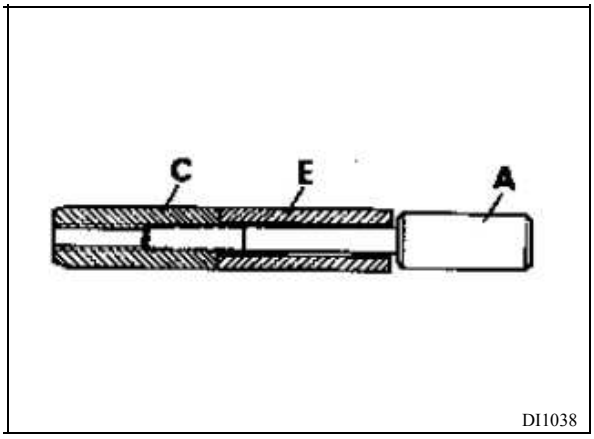


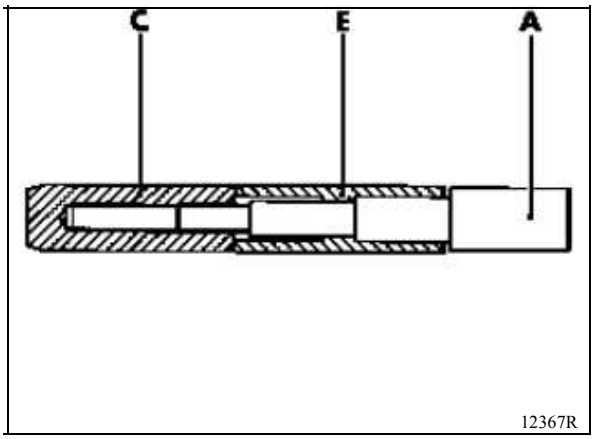
PREPARATION OF THE GUDGEON PINS

Check that the gudgeon pins are able to slide freely in the corresponding new pistons.

Use centring device **C13** and mounting tools **A13** or **A13-01** for the shouldered gudgeon pins.

Mount the gudgeon pin (E) on the mounting tool (A), tighten the centring device (C) **until contact is made, then slacken by a quarter turn**.

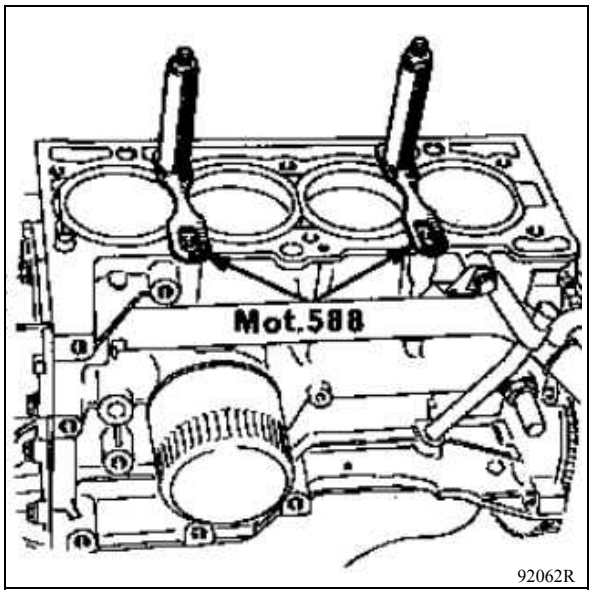




ENGINE AND PERIPHERALS
Engine repair

10

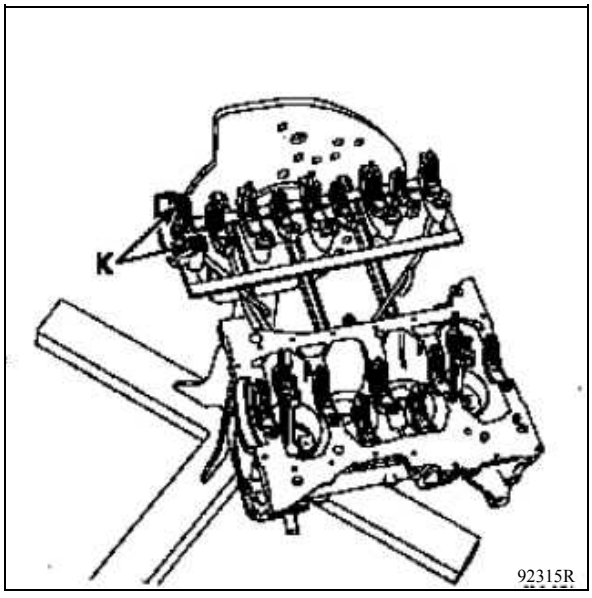
Immobilise the liners using tool **Mot. 588**.



MOUNTING THE BEARING SHELLS

The connecting rod bearing shells are identical.

The crankshaft bearing shells are grooved on the cylinder block side.



The upper shell of bearing **No. 5** is a special one and is also grooved.

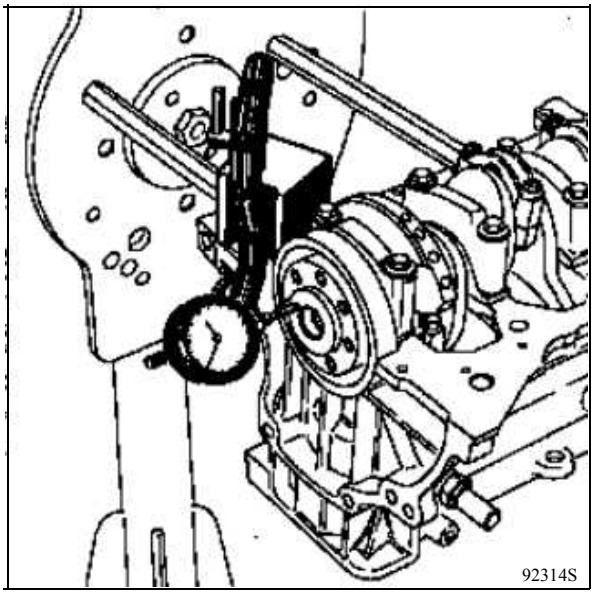
Fit the crankshaft and the end float shims.

Lubricate the crankpins and the main bearing journals with engine oil.

Refit the crankshaft bearing shells.

Apply a thin layer of **RHODORSEAL 5661** on bearing **N° 1** zone (K) and tighten the bolts to **2.5 daN.m** , then angle tighten to **43° ± 6°.**

Check the end floatof the crankshaft, which should be between:
- **0.045 and 0.852 mm with wear,**
- **0.045 and 0.252 mm without wear.**



Shims of the following thicknesses **(mm)** are available from the Parts Department: **2.80; 2.85; 2.90; 2.95.**

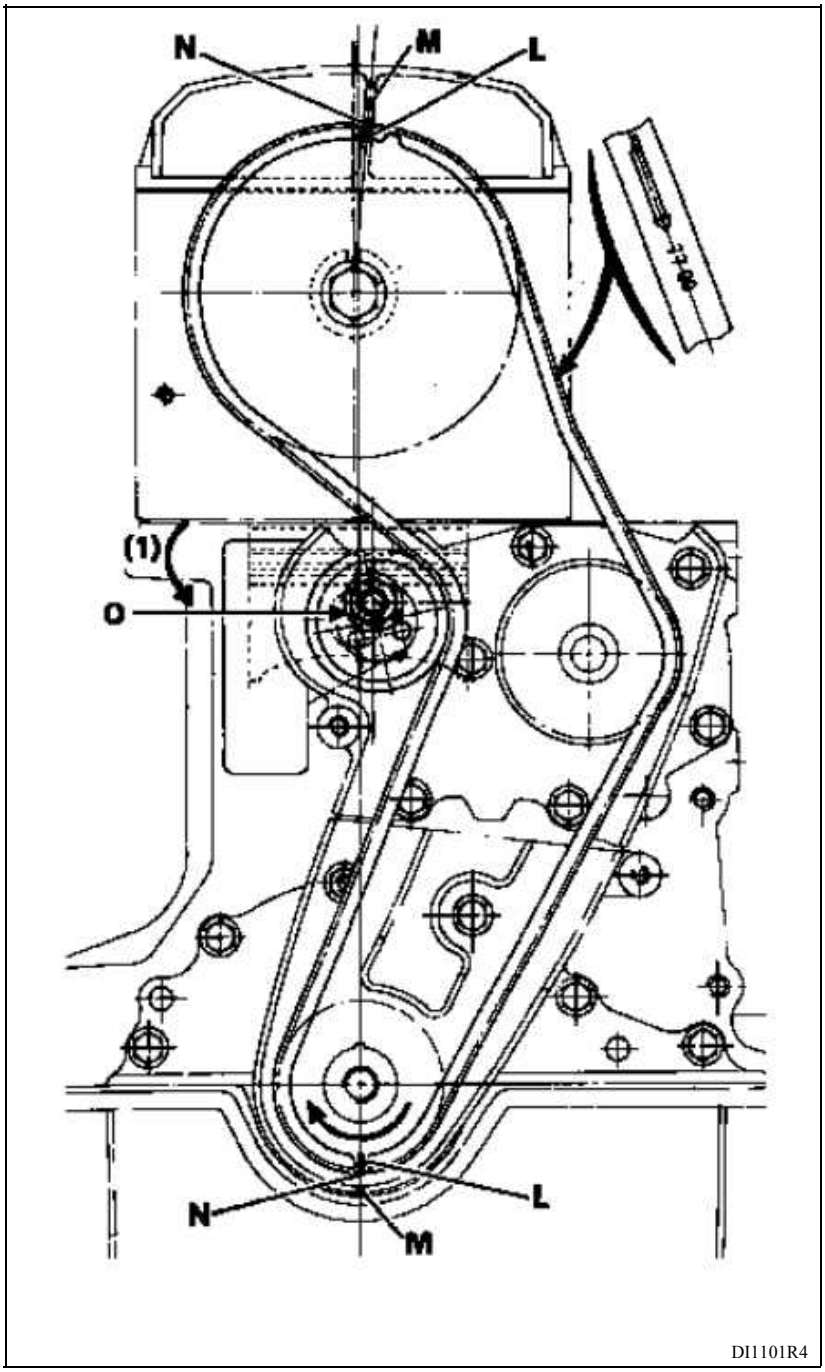
Refit the connecting rod shells and tighten the nuts to a torque value of **4.2 daN.m**.

Check:
- the end float of the connecting rods,
- that the assembly is able to rotate properly.

ENGINE AND PERIPHERALS
Engine repair

10

Setting the timing



(**1**) Direction of tensioning of the tension wheel.

ENGINE AND PERIPHERALS
Engine repair

10

Engine fitted with a CAMSHAFT SPROCKET WITH MARKS

Set the engine to TDC with ignition in cylinder **No.1.**

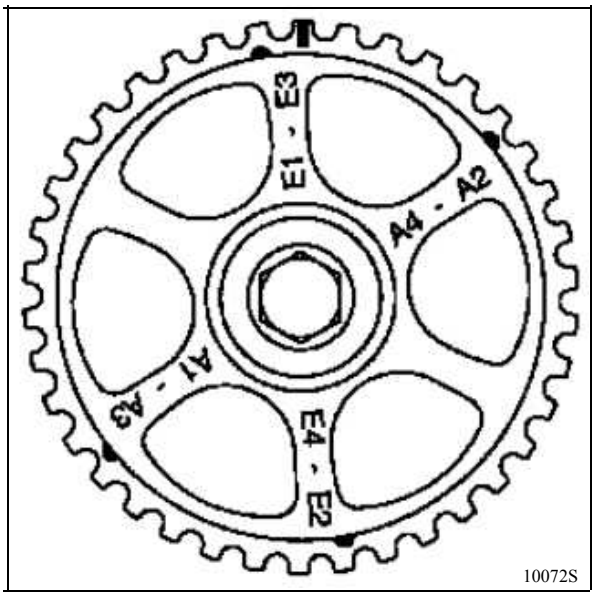
Turn the crankshaft clockwise (seen from the timing side) **as far as the first mark.**

SET: **exhaust 1**
exhaust 3

move on to the second mark:
SET: **inlet 1**
inlet 3

third mark:
SET: **exhaust 2**
exhaust 4

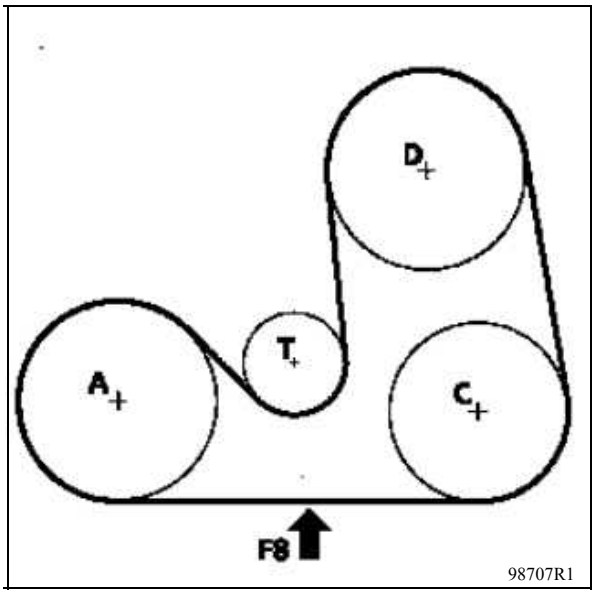
fourth mark:
SET: **inlet 2**
inlet 4



ENGINE AND PERIPHERALS
Engine repair

10

Air conditioning and Power assisted steering



Power assisted steering and Air conditioning