

RENAULT

N.T. 3784 A

KXX, and K4J or K4M

Gasoline Engine - 4 cylinders - K4

Engine that equips the:

- MEGANE

- LAGUNA

- CLIO II

- MÉGANE II

- LAGUNA II

- KANGOO

Cancels and replaces the NT: 3264, 3134, 3584

77 11 327 14

AUGUST 200

Spanish Edition

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Gasoline Engine - 4 cylinders - K4

Summary

10A

ENGINE AND LOWER ENGINE ASSEMBLY

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I - UNIT OF MEASURE

-All dimensions are expressed in millimeters mm (shall-
contrary indication).

-The tightening torques are expressed in
deca-Newtonmeters daN.m (remember: 1 daN.m =
1.02m.kg).

-The pressures are given in bars (remember: 1 bar
=100,000 Pa).

II - TOLERANCES

The tightening torques expressed must be respected
without tolerance:

-in Degrees (+/- 6°)

-and then. m (+/- 10%).

**ENGINE AND LOWER ENGINE
ASSEMBLY** Identification of motors

10A

Vehicle	Motorcycle	Index	Displacement (cm3)	Diameter interior (mm)	Carrera (mm)	Relationship volumetric
LAGUNA X561 X568 X56G	K4M	720 724a	159	79,	80,	10/1
MEGANE XAO	K4M	700 701 708 709 712a	159	79,	80,	10/1
XAO	K4	706	159	79,	80,	10/1
XAO	K4M	700 701 704a	159	79,	80,	10/1
XA1	K4M	706 708 709 712a	159	79,	80,	10/1
XA1	K4M	700 701 708	159	79,	80,	10/1
XAO	K4	714 750	139	79,	7	10/1
XA1	K4	714	139	79,	7	10/1
XAO	K4	700 750	139	79,	7	10/1
XA1	K4	714 750	139	79,	7	10/1
CLIOII XBOH	K4	708 748	159	79,	80,	10/1
XBO	K4	748	159	79,	80,	10/1
XBO	K4	740	159	79,	80,	10/1

**ENGINE AND LOWER ENGINE
ASSEMBLY** Identification of motors

10A

Vehicle	Motorcycle	Index	Displacement (cm3)	Diameter interior (mm)	Carrera (mm)	Relationship volumetric
XB1D	K4	744	159	79,	80,	10/1
XB14		745				
XB1	K4	740	159	79,	80,	10/1
XB1	K4	742	159	79,	80,	10/1
		743				
XB1V	K4	734	159	79,	80,	10/1
XB18						
XBO	K4	712	139	79,	7	10/1
XBOL	K4	712	139	79,	7	10/1
XB2A		713				
XB2B						
XBO	K4J	710 711 712 713 715	139	79,	7	10/1
XB1	K4	710 711	139	79,	7	10/1
XB1	K4J	710 711 712	139	79,	7	10/1
LAGUNAII						
XGO	K4	710 711	159	79,	80,	10/1
XGO	K4	710 714a	159	79,	80,	10/1
XGO	K4	711	159	79,	80,	10/1
MEGANE						
XMO	K4	760 761	159	79,	80,	9,8/1
XMOB						
XMOH	K4	730	139	79,	7	10/1
XMOJ						

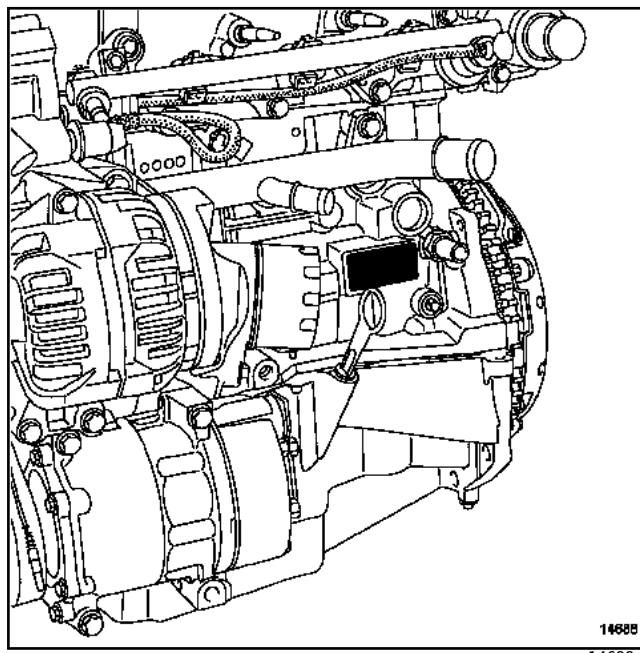
ENGINE AND LOWER ENGINE ASSEMBLY

Identification of motors

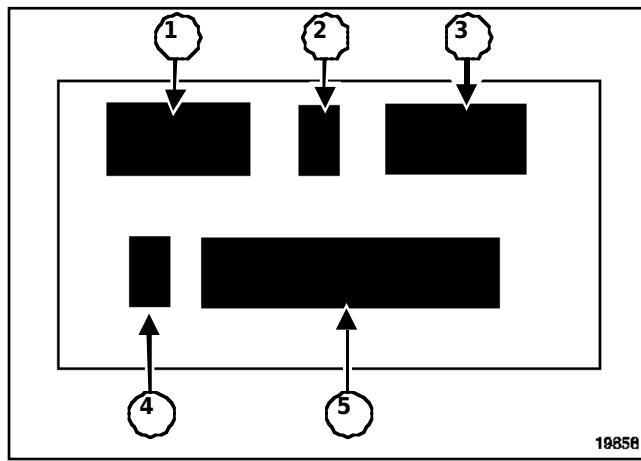
10A

Vehicle	Motorcycle	Index	Displacement (cm ³)	Diameter interior (mm)	Carrera (mm)	Relationship volumetric
XMO	K4	732	139	79,	7	10/1
KANGOO						
XCOL	K4	750	159	79,	80,	10/1
XCOP		752				
XCO	K4M	750 752 753	159	79,	80,	10/1

a.Engine that works with Liquefied Petroleum gas.



Motor identification is done well by a plateriveted or engraved on the cylinder block.



Identification includes:

- (1): the engine type,
- (2): the approval letter,
- (3): Renault identification and engine index,
- (4): the engine assembly factory,
- (5): the engine build number.

I - HEADS

1 - Cylinder head tightening method

ATTENTION

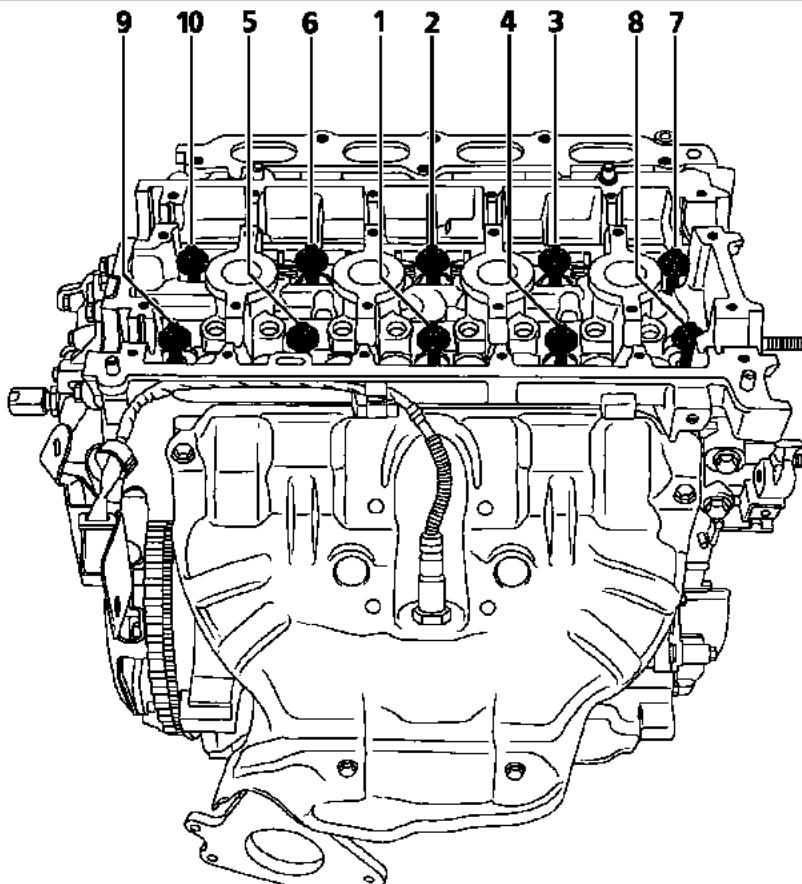
To obtain a correct tightening of the screws, remove with a syringe any oil that may have stayed in the mounting holes of the cylinder head.

ATTENTION

Reuse the screws if the length below the head does not exceed **117.7 mm** (if it does, replace or remove all screws).

ATTENTION

Do not oil the new bolts. Oil imperative-the screws in case of reuse.



14500

14500

Tighten the cylinder head bolts in the order and to torque **2 ± 0.2 daN.m**.

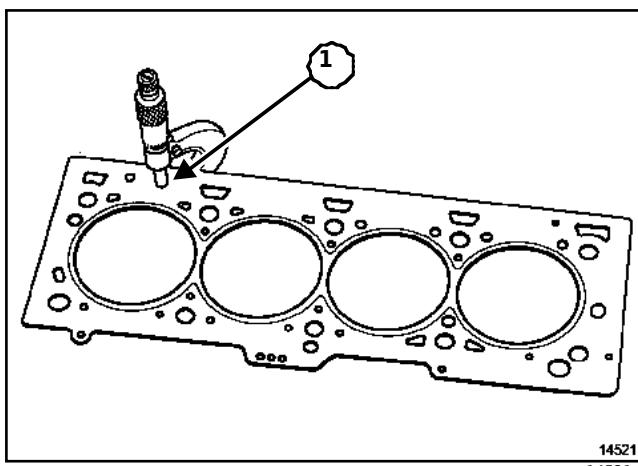
Check that all the bolts are tightened to **2 ± ± ± ± 0.2 daN.m**.

Tighten in order and at angular tightening the screws of the cylinder head **240° +/- 6°**.

ATTENTION

Do not retighten the cylinder head bolts after applying this process.

2 - Cylinder head gasket thickness

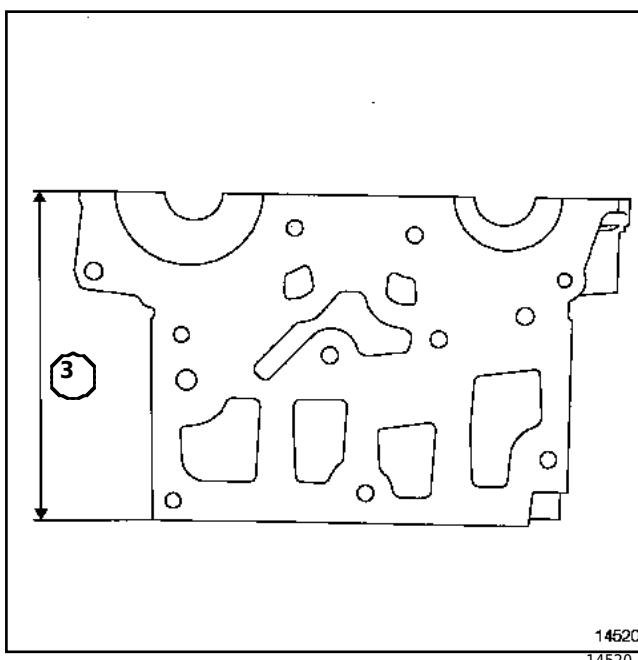


The thickness of the cylinder head gasket is measured in (1):

-Thickness new board **0,96 ±±± 0,06 mm**,

-thickness of the crushed gasket **0,90 ± 0,02 mm**.

3 - Stock height



Cylinder head height (3) = **137 mm**

Maximum deformation of the joint plane:

0,05 mm

0,03 mm

No rectification is authorized.

Test the cylinder head for a possible crack with the tools to check the cylinder head (see Catalog Workshop Equipment).

4 - Identification of the cylinders

Cylinder N°1 is located on the flywheel side.

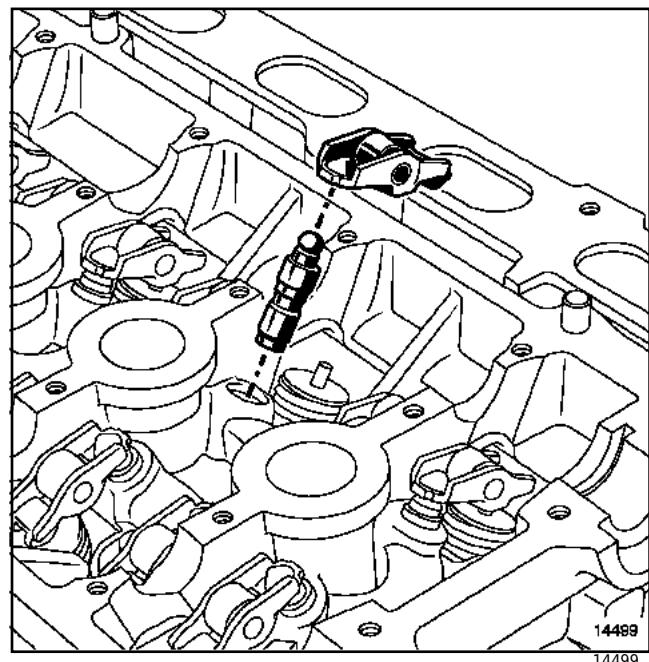
5 - Power on

The firing order is **1 - 3 - 4 - 2**.

Separation of the plugs should be **0.95 ±±± 0.05 mm**.

The torque of the spark plug is **2.5 to 3 daN**.

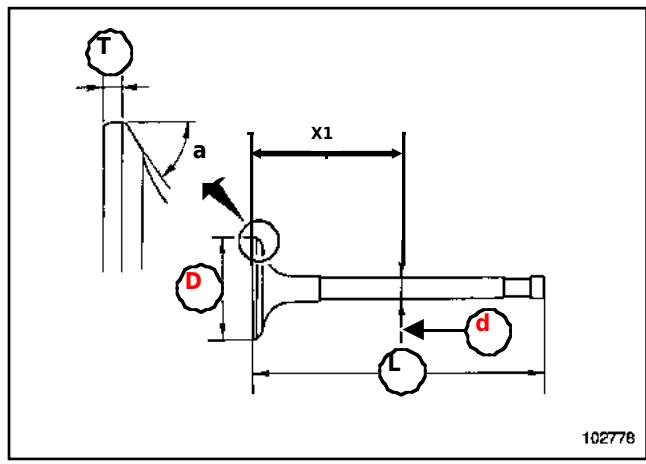
6 - Hydraulic pusher



This motor is equipped with hydraulic stops (4) and roller rocker arms (5).

There is no valve lash adjustment on this engine.

7 - Valves



ENGINE AND LOWER ENGINE ASSEMBLY

Top of the motor: Features

10A

Valve stem diameter (**D**) is measured in (**X1**)

-Admission (**X1**) = **75.14 ± 0.4 mm** **0.35 mm** , (**D**) = **5.470 to 5.485**

mm

X177,5 0,35 mm D5,456 a 5,471

mm

Valve head diameter (**D**)

-Admission **32.7 ± 12.12 mm**

27,96 0,12 mm

Valve length (**L**)

-Admission **109.32 mm**

107,64 mm

Seat angle (**A**)

-Intake and exhaust **45° 45' to 45°**

Head thickness (**T**)

-Admission **1.15 mm**

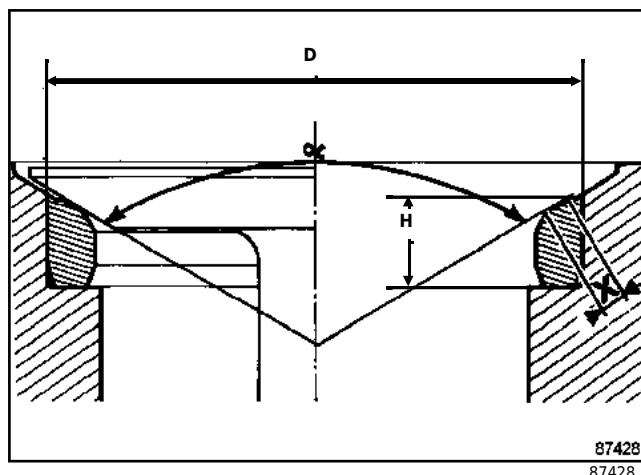
1,27 mm

Valve lift

-Admission **9.221 mm**

8,075 mm

8 - Valve seats



Valve seat housing bore(**D**) on the cylinder head

-Admission **33,425 to 33,464 mm**

28,67 a 28,703 mm

Valve seat outside diameter (**D**)

-Admission **33.534 to 33.55 mm**

28,785 a 28,798 mm

Valve seat housing depth (**H**)

in the cylinder head

-Admission **4.65 ± 0.02 mm**

5,54 0,02 mm

Valve seat height (**H**)

-Admission **4.65 ± 0.04 mm**

5,44 0,04 mm

Seat area width (X)

-Admission **1.3 mm**

1,4 mm

Angles of seating areas

-Angle (a): **89°**

9 - Valve guides

Valve guide length

-Intake and exhaust **40.5 ± ± ± 0.15 mm**

Guide outer diameter

-Intake and exhaust **11.05 to 11.068 mm**

Diameter of the guide housing in the cylinder head

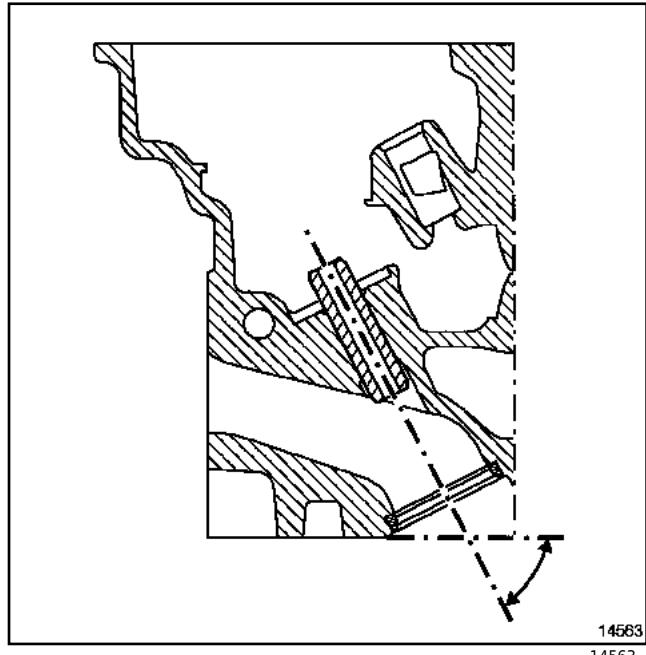
-Intake and exhaust **11 mm**

Guide inner diameter

-Non-machined intake and exhaust **4.95 to 5.025 mm**

-Machined intake and exhaust * **5.5 to 5.518 mm**

- * The measurement is made once the guide has been mounted on the years.

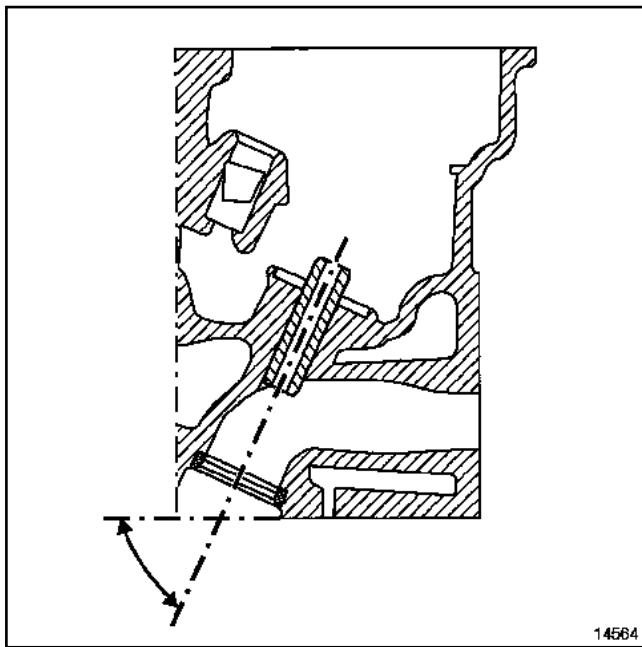


ENGINE AND LOWER ENGINE ASSEMBLY

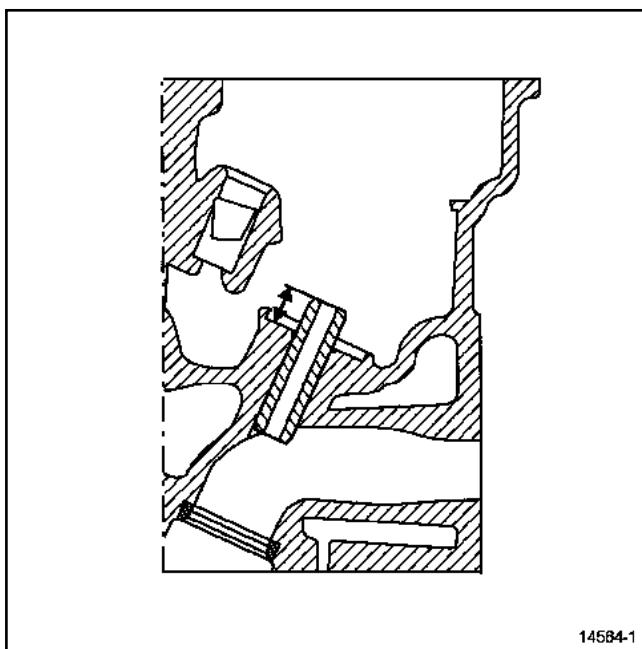
Top of the motor: Features

10A

Intake valve guide **pitch 63°30'**



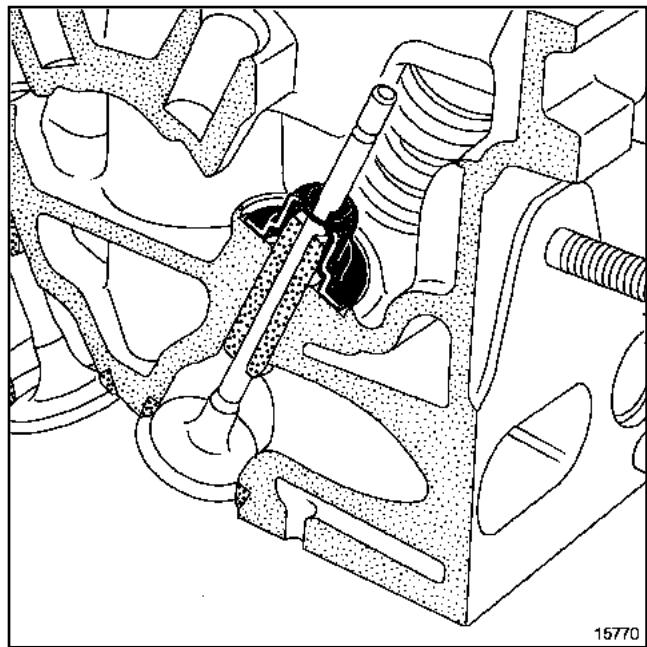
Exhaust valve guide **tilt 66°**



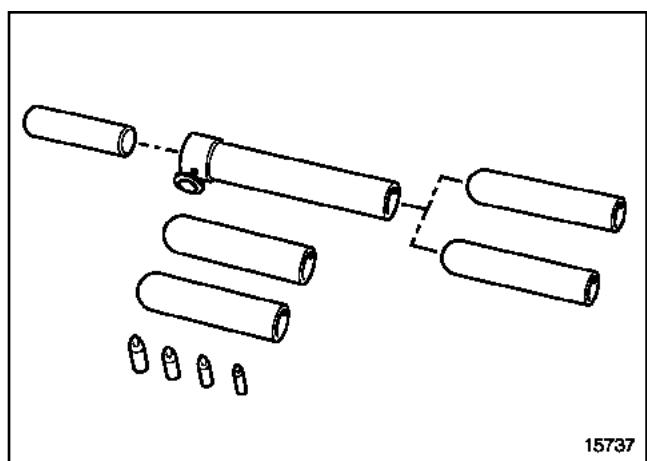
Valve guide position relative to cylinder head:

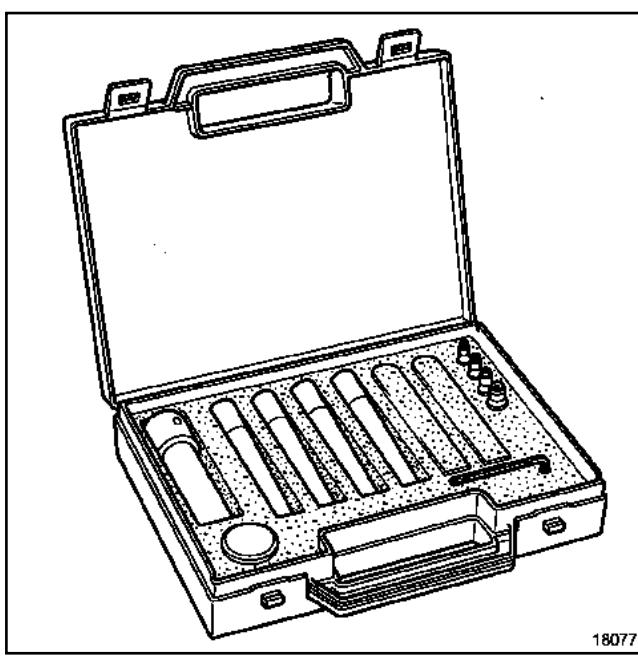
-Intake and exhaust **$11 \pm \pm \pm 0.15 \text{ mm}$**

10 - Valve tail gasket



The intake and exhaust guides have joints valves of the valve tail, it is imperative to change at each valve disassembly.



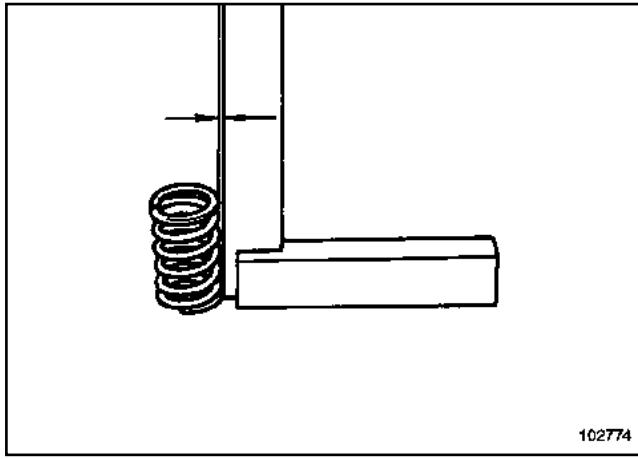


It is imperative to fit the valve stem seals with the tool (Mot. 1511) or with the **case to place-tion of the appropriate valve tail gaskets**.

NOTE:

Do not oil the valve stem seals before to mount them.

11 - Valve springs



Spring perpendicularity **1.2 mm**

Free length **41.30 mm**

Length with turns together **23.20 mm**

Inner diameter **18.80 ±±± 0.2 mm**

Outer diameter **27 ± ± ± 0.2 mm**

Length under load of:

-Under a load of **18 to 20 daN** the length of the spring is **34.50 mm**,

-Under a load of **56.3 to 61.7 daN** the length of the spring is **24.50 mm**.

II - CAMSHAFT

End play

-Intake and exhaust **0.08 to 0.178 mm**

Diametrical clearance:

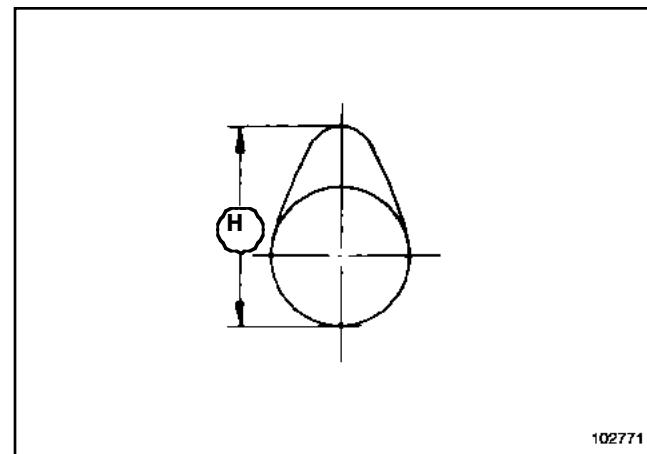
-on the supports **0.04 to 0.082 mm**

Number of supports **6**

Cam height (**H**):

-Admission **40.661 ±± 0.034 mm**,

40,038 0,03 mm



Diameter of camshaft bearings

-on the camshaft:

-supports N°1 (flywheel side) - 2 - 3 - 4 - 5 **24,979 a 25 mm**

27,979 a 28 mm

-on the cylinder head:

-supports N°1 (flywheel side) - 2 - 3 - 4 - 5 **25.04 a 25,061 mm**

28,04 a 28,061 mm

ENGINE AND LOWER ENGINE ASSEMBLY

Top of the motor: Features

10A

K4M, y 700 or 701 or 704 or 706 or 708 or 709 or 710
or 711 o 712 o 714 o 720 o 724 o 734 o 740 o 742 o 743
o 744 o 748 o 750 o 752 o 753 - K4J, y 700 o 710 o 711
o 712 o 713 o 714 o 715 o 730 o 732 o 750

Distribution diagram (not verifiable) for the models or not equipped with a letter shaft phase shifter.admission path (theoretical draft for an elevation of **0,7 mm**)

	Intake camshaft Zion		Camshaft escape	
	He takes	He takes	He takes	take 2
Admitted opening delay Zion*	-	-		-
Delay closing admit- Zion	1	2		-
Advance opening escape	--1814			
Exhaust closing advance *			-	-4

K4M, and 760 or 761

Distribution diagram (not verifiable) for the models engines equipped with a camshaft phase shifter for intake (theoretical draft for a lift of **0.7 mm**)

	Intake camshaft Zion		Camshaft escape	
	He takes	He takes	He takes	take 2
Admitted opening delay Zion*	-2	-2		-
Delay closing admit- Zion	4	4		-
Advance opening escape	--1713			
Exhaust closing advance *			-	2

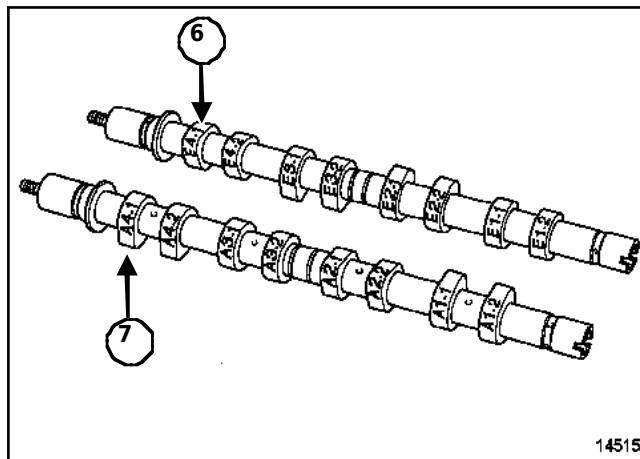
* As the admission opening delay is negative, the opening of the valves is after the point top dead.

ENGINE AND LOWER ENGINE ASSEMBLY

Top of the motor: Features

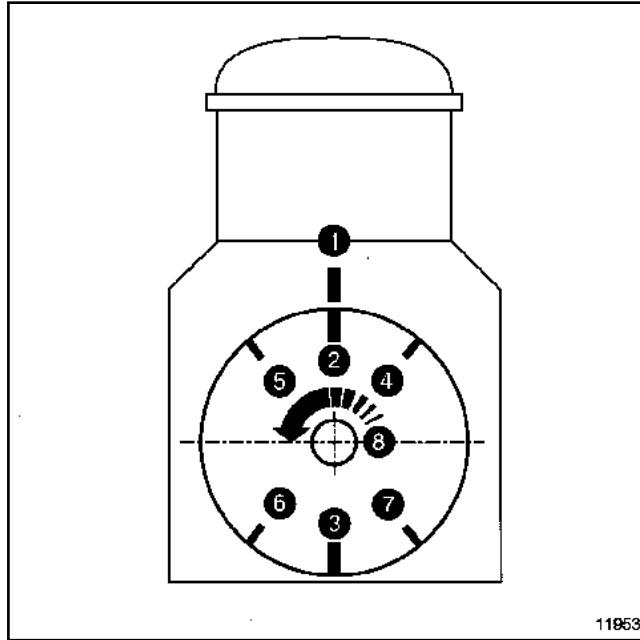
10A

** As the escape closure advance is negative, the closure of the valves is located before the Dead Center Superior.



6 E 4 - 1 = Escape of cylinder N°4 and cam N°1.

7 A4 - 1 = Cylinder intake N°4 and cam N°1.



-1 Fixed mark of the Top Dead Center of the motor,

-2 Moving mark of the Top Dead Center of the steering wheel motor,

-3 Moving mark of the Lower Dead Center of the steering wheel motor,

-4 Delay opening admission,

-5 Exhaust closing advance,

-6 Delay in closing admission,

-7 Exhaust opening advance,

-8 Direction of rotation of the crankshaft.

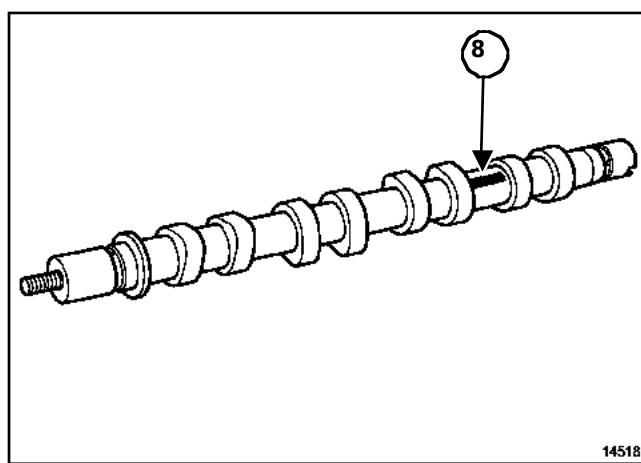
Camshaft identification

K4M, y 700 or 701 or 704 or 706 or 708 or 709 or 710 or 711 o 712 o 714 o 720 o 724 o 734 o 740 o 742 o 743 o 744 o 748 o 750 o 752 o 753 - K4J, y 700 o

710 o 711 o 712 o 713 o 714 o 715 o 730 o 732 o 750

Identification of camshafts for engines not equipped with a camshaft phase shifter admission.

Identification of camshafts can be done two ways.



Good by engraving (8)

Engraving detail:

XXXXXXXX		
1	2	3

Marks 1 and 2 are for the supplier only.

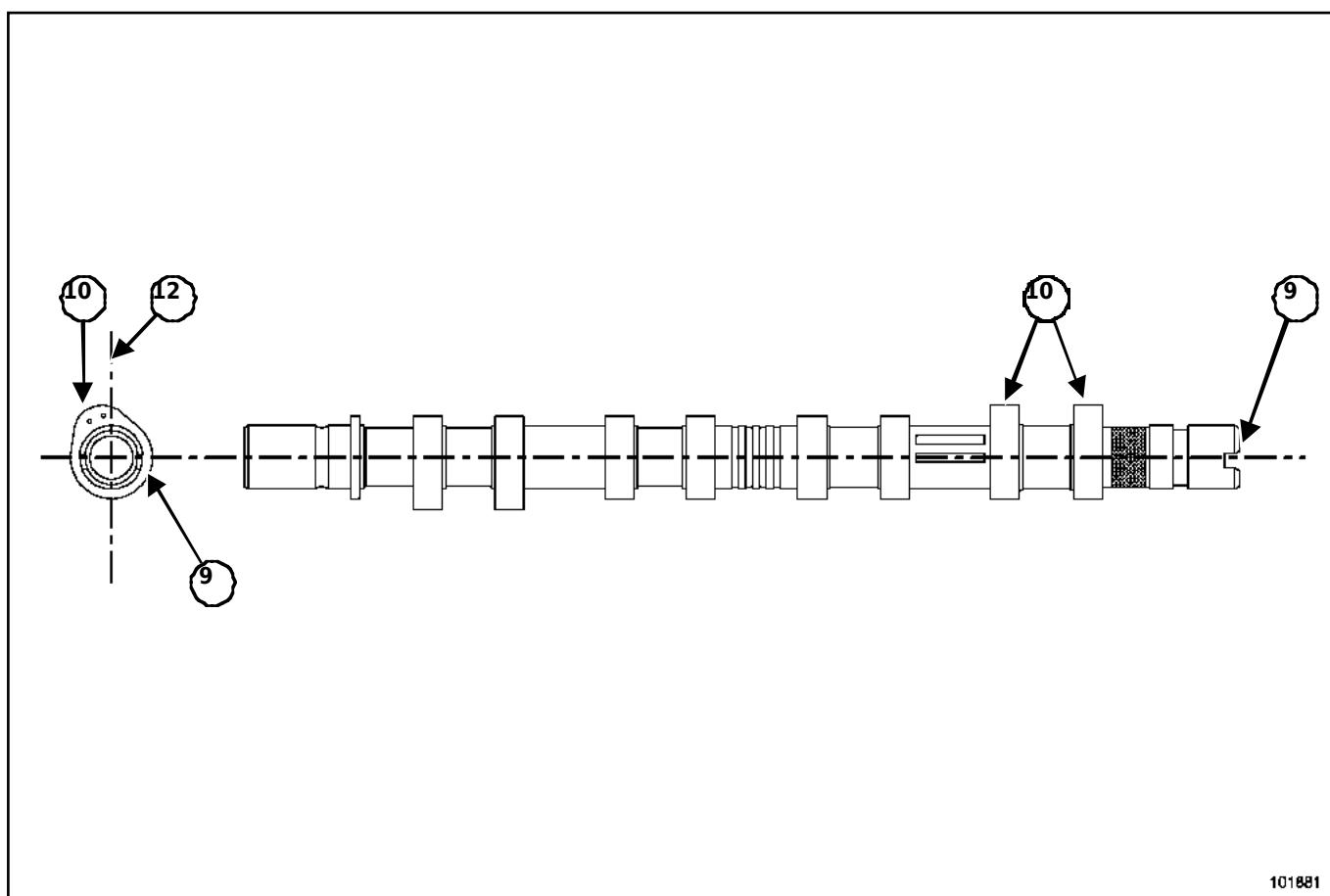
Mark 3 is used to identify the trees of valves:

-AM = Admission,

-EM = Escape.

Well by an identification regarding the cams.

Intake camshaft:

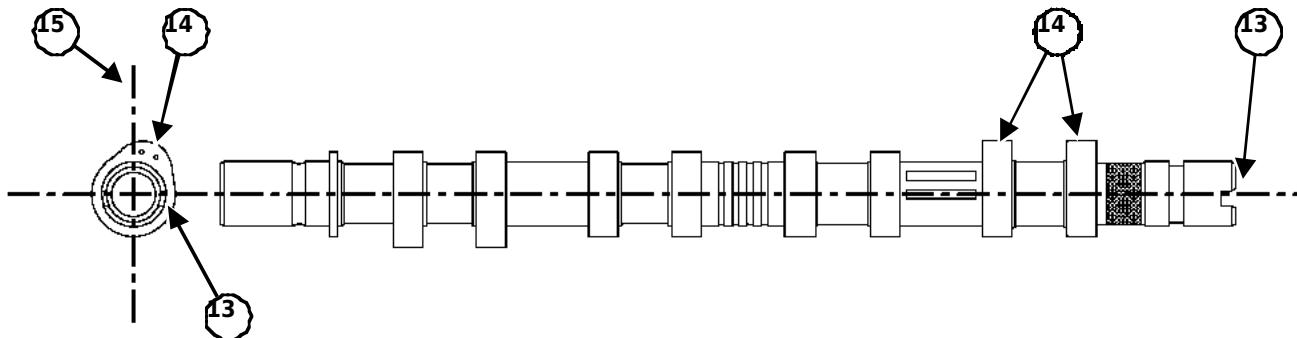


101881
101881

Put the groove (**9**) at the end of the camshaft horizontally and off-center downward.

The cams (**10**) of the No. 1 cylinder must be at the left of the vertical axis (**12**).

Exhaust camshaft:



101880
101880

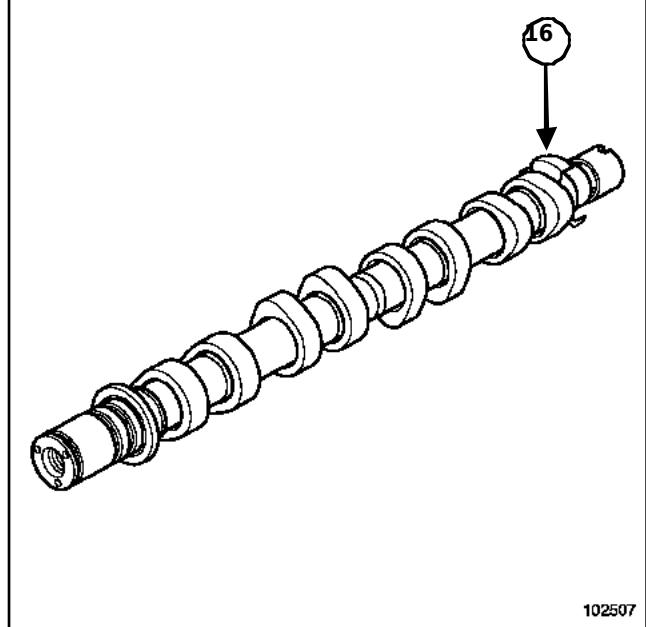
Put the groove (**13**) on the end of the camshaft horizontally and off-center down.

The cams (**14**) of the No. 1 cylinder must be at the right of the vertical axis (**15**).

K4M, and 760 or 761

Identification of camshafts for engines equipped with an ad-mission.

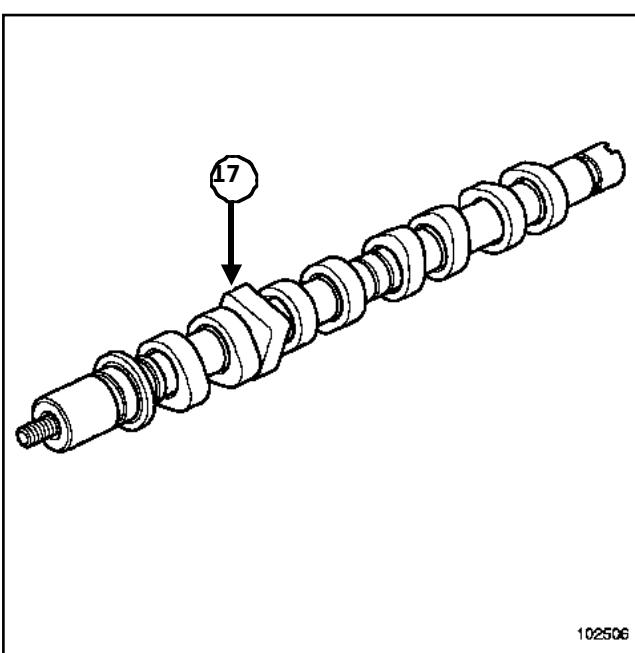
Intake camshaft:



102507
102507

The intake camshaft is equipped with a toothed ring (**16**) for cylinder identification.

Exhaust camshaft:



The exhaust camshaft is equipped with a camsquare (17).

-Outer diameter of the tappet **31.949 to 31.975**

mm

Pusher spring:

-Perpendicularity of the spring **1.5 mm**

-Free length **51.83 mm**

-Length with turns together **32.80 mm**

-Inner diameter **19.20 ±±± 0.2 mm**

-Outside diameter **28.40 ± ± ± 0.2 mm**

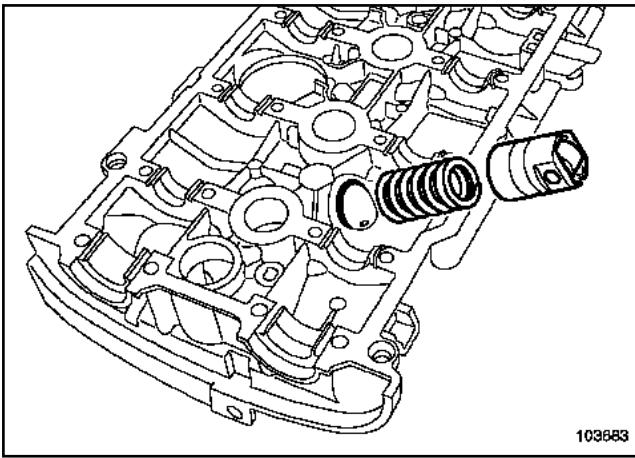
Length under load of:

-Under a load of **63.37 to 69.97 daN** the length of the spring is **40 mm**,

-Under a load of **99.7 to 109.1 daN** the length of the spring is **34.40 mm**.

III - CAMSHAFT PUSHERESCAPE

K4M, and 760 or 761



Diameter of the tappet housing and its ownpusher:

-Diameter of tappet housing **32 to 32.025**

mm

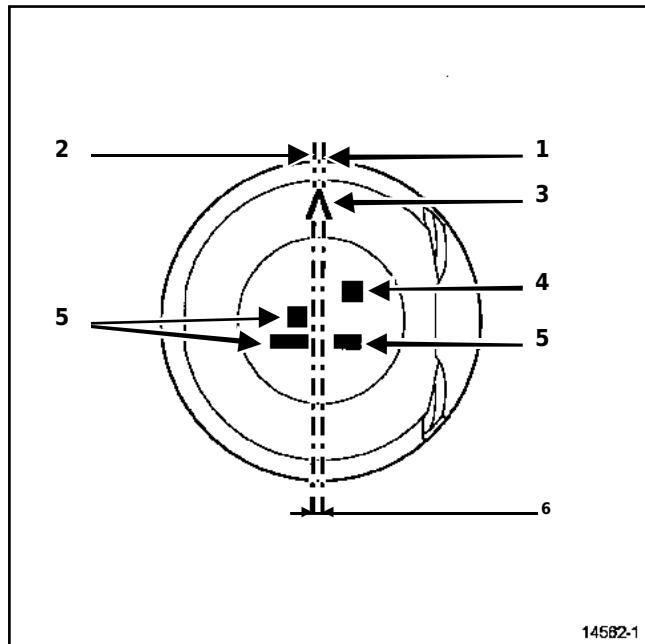
I -PISTON

The gudgeon pin is tight in the connecting rod and free in the piston.

The engines are equipped with SMP (So-Moselle company of Piston SA).

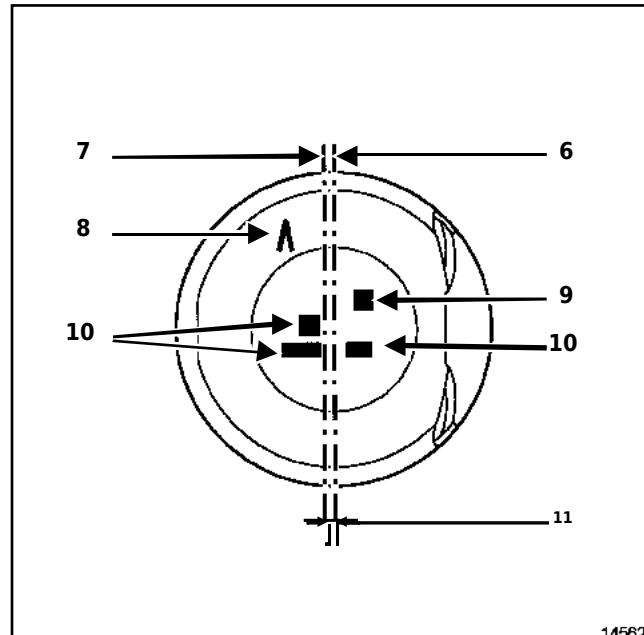
1 - Marking the pistons

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730 or 732 or 750



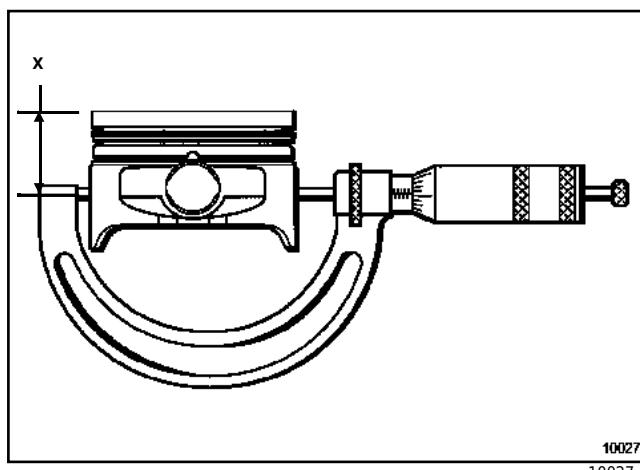
- 1 Piston axis of symmetry
- 2 Piston pin hole shaft tone
- 3 sense of piston assembly "V" flywheel side
- 4 The piston diameter class (A - B - C)
- 5 It is only used for the seer
- 6 Overhang between shaft hole and the axis of symmetry of the piston is 0, 8 mm

K4M, y 700 or 701 or 704 or 706 or 708 or 709 or 710 or 711 o 712 o 714 o 720 o 724 o 734 o 740 o 742 o 743 o 744 o 748 o 750 o 752 o 753 o 760 o 761



- 6 Piston axis of symmetry
- 7 Piston pin hole shaft tone
- 8 Piston mounting direction "V" flywheel side
- 9 The piston diameter class (A - B - C)
- 10 It is only used for the seer
- 11 Overhang between shaft hole and the axis of symmetry of the piston is 0, 9 mm

2 - Piston measurement



K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715
o 730 or 732 or 750

Piston diameter:

-For the K4J engine the piston diameter is measured in the dimension **X = 45.7 ± 0.01 mm** from the head of the piston tone,

Piston diameter classes

Identifi cation of the classes his from diameter of the pistons	Diameter of the pistons en mm
A	79,475 0,005
B	79,485 0,005
C	79,495 0,005

Piston height:

-For the K4J engine the total height of the piston is **46.5**

mm

K4M, y 700 or 701 or 704 or 706 or 708 or 709 or 710 or
711 o 712 o 714 o 720 o 724 o 734 o 740 o 742 o 743 o 744 o
748 o 750 o 752 o 753 o 760 o 761

Piston diameter:

-For the K4M engine the piston diameter is measured in the dimension **X = 42 ± 0.01 mm** from the piston head tone.

Piston diameter classes

Identifi cation of the classes his from diameter of the pistons	Diameter of the pistons en mm
A	79,475 0,005
B	79,485 0,005
C	79,495 0,005

Piston height:

-For the K4M engine the total height of the piston is **55**

mm

3 - Measurement of the piston pin

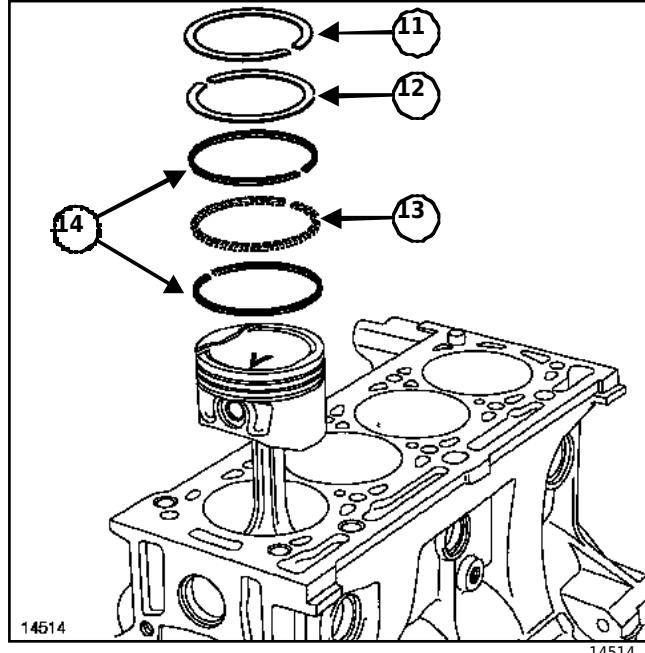
Piston pin:

61,7 a 62 mm

-Outer diameter 19.986 to **19.991 mm**,

-Inner diameter 11.6 mm maximum.

II - SEGMENT



14514

14514

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o

730 or 732 or 750 - K4M, and 700 or 701 or 704 or
706708 o 709 o 710 o 711 o 712 o 714 o 720 o 724
o 734 o 740 o 742 o 743 o 744 o 748 o 750 o 752
o 753

segments	Segment thickness cough in mm	Play in cut in mm
Fire (11)	1,47 a 1,4	0,15 a 0,35
Watertightness (12)	1,47 a 1,49	0,4 a 0,6
Scraper (13)	1,47 a 1,5	0,2 a 0,9
Scraper (14)	0,42 a 0,44	0,2 a 0,9

K4M, and 760 or 761

segments	Segment thickness cough in mm	Play in cut in mm
Fire (11)	1,47 a 1,4	0,15 a 0,3
Watertightness (12)	1,47 a 1,49	0,4 a 0,6
Scraper (13)	1,17 a 1,1	0,2 a 0,9
Scraper (14)	0,42 a 0,44	0,2 a 0,9

III - BIELA

ATTENTION

Do not use any punch or engraving apparatus for identifying the connecting rod caps with respect to their bodies, in order to avoid a threat of connecting rod breakage. Use a marker pen indelible.

The maximum difference in weight (for the connecting rod assembly -piston - gudgeon pin) for the same engine must be **6 grams** mos

Big end side play:

-For K4J engine **0.205 to 0.499mm**,

-For the K4M engine **0.310 to 0.604 mm**.

Diametrical clearance of the big end of the connecting rod:

-Diametral set **0,022 a 0,045 mm**

Inter-axes between the head and the foot of the connecting rod:

-Enter-axes of the connecting rod **128 ± 0.035 mm**.

Connecting rod head and foot diameters:

-Diameter of connecting rod head **47.612 to 47.627 mm**

-Diameter of the connecting rod **19.945 to 19.958 mm**.

IV - CRANKSHAFT

Number of supports **5**.

The side cleats are located on support number3.

Crankshaft side play:

-Wearless side **shims 0.045 to 0.252 mm**,

-With wear of the lateral **cleats 0.045 to 0.852 mm**

Diametrical clearance of the crankshaft:

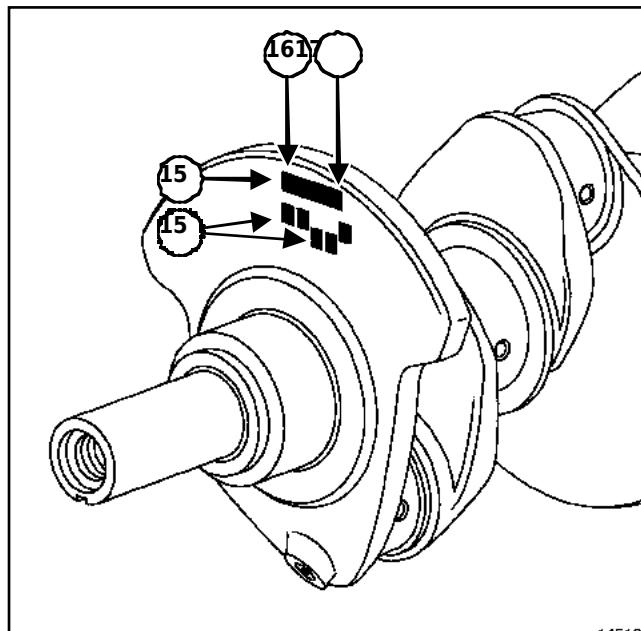
0,027 a 0,054 mm

Crankshaft stroke:

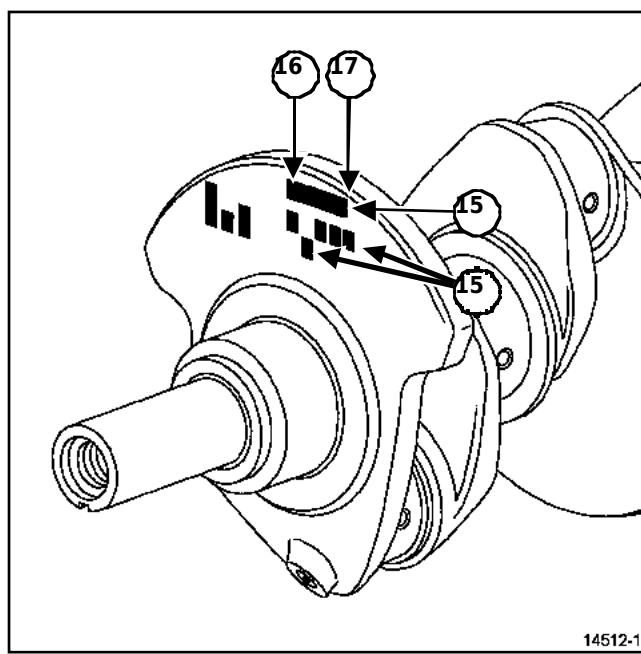
-For K4J **70mm** engine ,

-For K4M **80.5 mm** engine .

First brand



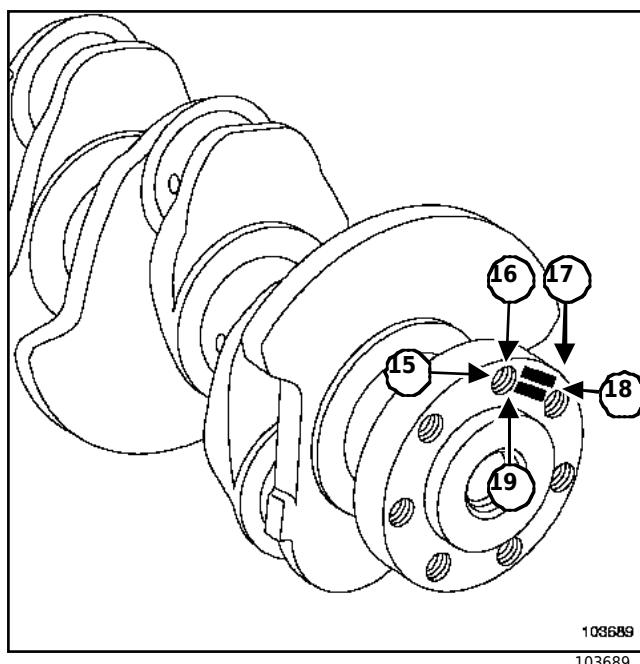
second mark



a - Crankshaft mark

There are three different brands.

Third mark



- 15** Torreto diameter class-
because,
- 16** Tower diameter class
number 1 flywheel side,
- 17** Tower diameter class
number 5 distribution side,
- 18** Diameter class of wrists
keels,
- 19** Wrist diameter class
keel number 1 side steering wheel
motor.

**b - Tables of the diameter classes of
the turrets and crankpins**

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715
o 730 or 732 or 750

Tower diameter classes

Torreone class	Tower diameter in mm
	47,990 inclusive a 47,997 exclusive
	47,997 inclusive a 48,003 exclusive
	48,003 inclusive a 48,010 inclusive

K4M, y 700 or 701 or 704 or 706 or 708 or 709 or 710 or 711 o
712 o 714 o 720 o 724 o 734 o 740 o 742 o 743 o 744 o 748 o
750 o 752 o 753 o 760 o 761

Tower diameter classes

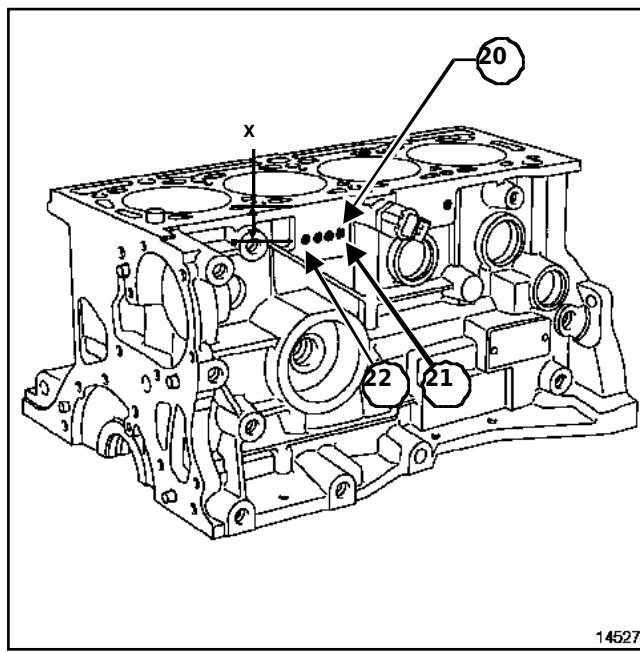
Torreone class	Tower diameter in mm
	47,990 inclusive a 47,997 exclusive
	47,997 inclusive a 48,003 exclusive
	48,003 inclusive to 48,010 inclusive

Crankpin diameter classes

Class from the wrist-keels	Crankpin diameter in mm
	43,960
	43,961
	43,962
	43,963
	43,964
	43,965
	43,966
	43,967
	43,968
	43,969
	43,970
	43,971
	43,972
	43,973
	43,974
	43,975
	43,976
	43,977
	43,978
	43,979
	43,980

V - MOTOR BLOCK

1 - Identification of the cylinder diameter



ATTENTION

It is imperative to respect the matings of the diameters between the pistons and the cylinder block what engine.

The position (**X**) of the holes (**20**) with respect to the plane of cylinder block gasket determines the diameter of the cylinder

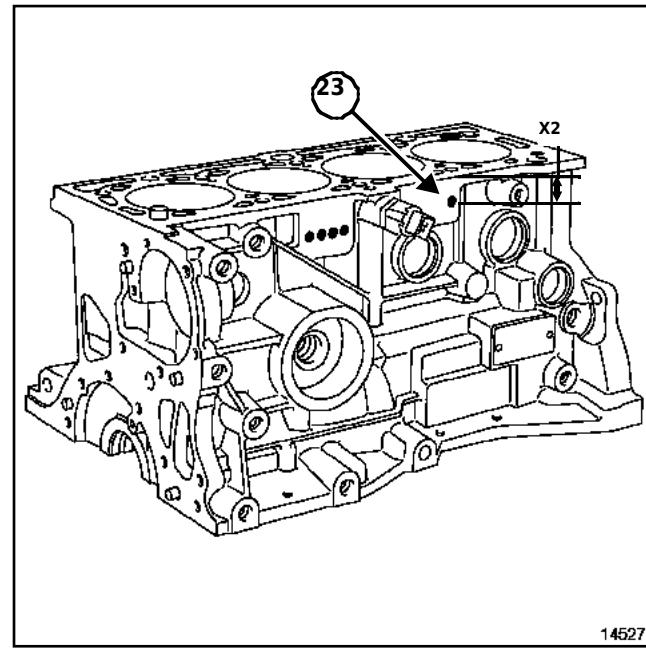
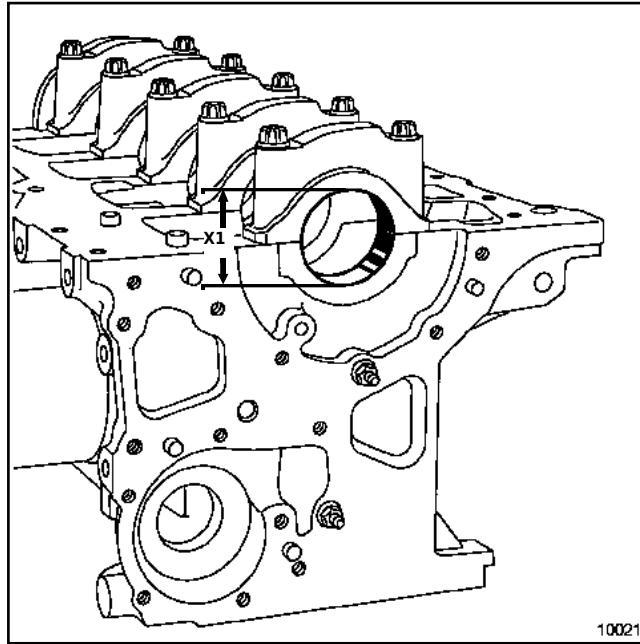
lindro.

The mark (**21**) corresponds to cylinder number 1, and the mark (**22**) corresponds to cylinder number 4.

Table of cylinder block diameters

Position of the holes (20) in mm	class mark	Engine block cylinder diameter in mm
X17	A	79,500 79,510
X27	B	79,510 79,520
X37	C	79,520 inclusive to 79,530 inclusive

**2 - Identification of the diameter of the towers
in the engine block**



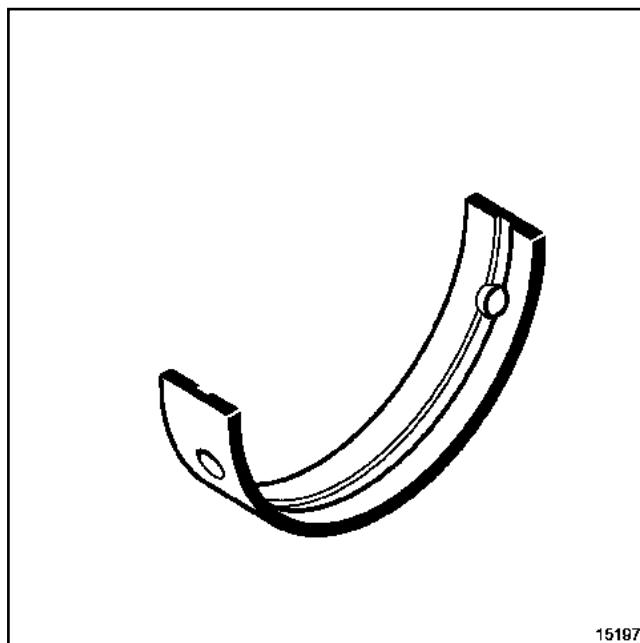
The diameters (**X1**) of the bearings of the towers of the engine block are marked with a perforation located at (**23**) above the oil filter.

Table of the diameters of the turrets of the engine block

Hole position (23) and mm	Class mark	Diameter of the towers on the engine block in mm
X217	1	51,936 inclusive a 51,942 exclusive
X227	2	51,942 inclusive a 51,949 inclusive

VI - BEARINGS

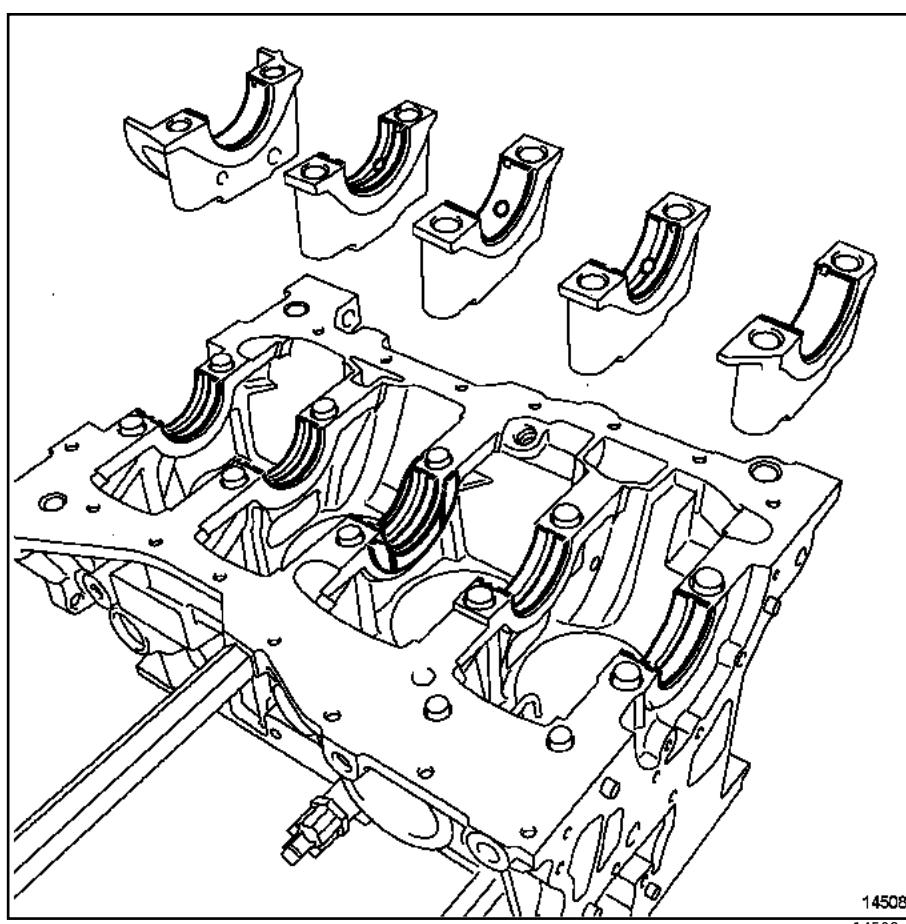
1 - Crankshaft bearings



The motor is equipped with bearings without a positioner.

The bearings are fitted using the tool (Mot. 1493-01).

bearing mounting direction



Positioning of the crankshaft bearings:

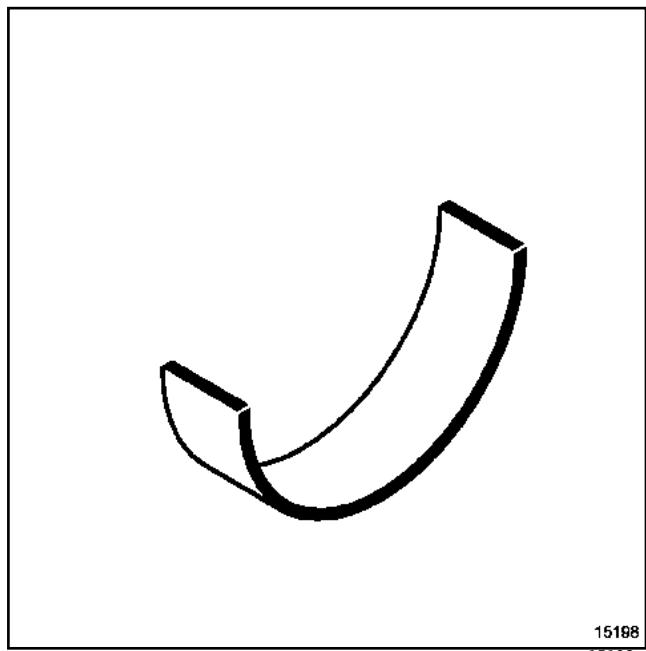
-On the engine block, put the grooved bearings in

all supports,

14508

-On the crankshaft bearing caps, put the splined bearings in bearing caps numbers 2 and 4, and the non-grooved bearings in the support straps number 1 - 3 - 5.

2 - Crank bearings



The motor is equipped with bearings without a positioner.

The bearing assembly is carried out using the tool (Mot. 1492).

3 - Tower bearing mating

Diameter class others of the torque- because of block motor	Diameter class of crankshaft tower			
	To the	B o	C o F	
	C1 = yellow 1,949 a 1,955	C2 = blue 1,946 a 1,952	C3 = black 1,943 a 1,949	
	C4 = red 1,953 a 1,959	C1 = yellow 1,949 a 1,955	C2 = blue 1,946 a 1,952	Class and thickness (in mm) of bearings

ENGINE AND LOWER ENGINE ASSEMBLY

Ingredients

10A

INGREDIENTS

Tip	Quantity	Body concern	Reference
GRASA FLUORAD	Cord	Ignition coils	82 00 168 855
Decapjoin	Unta	Joint drawings	77 01 405 952
RHODORSEAL 566	Cord	Sombrerete from support crankshaft	77 01 404 452
LOCTITE 51	Bead or spread	Water pump, cap cylinder head	77 01 421 162
Loctite FRENETANC	1 to 2 drop	Screws of the pump of water	77 01 394 070

PARTS TO REPLACE

Parts that must be systematically replaced in engine repair case:

- All the boards,
- The thermostat,
- The cooling circuit hoses if they are damaged
- The accessory and timing belts,
- The tensioner and winding rollers of the belts accessories or distribution,
- Crankshaft accessories pulley bolts,
- The nuts of the camshaft pulleys,
- The intake camshaft phase shifter cap-Zion,
- The intake camshaft phase shifter screw-Zion,
- The plugs of the cylinder head cover and the end of the cylinder head (flywheel side),
- the oil filter,
- the flywheel bolts,
- The bolts of the connecting rod caps,
- The bolts of the cylinder bearing caps güeñal,
- The piston bottom cooling jets,
- The gaskets of the valve tails,
- Valve guides.
- The piston - piston pin assembly.

PRECAUTIONS

4 - Engine wash

Protect the different accessories to avoid any projection of water and washing products on the-the.

Do not introduce water into the air intake pipes.

5 - Placement of added threads

The threaded holes of the set of parts that make up the engine (except for the cylinder head cover) can be repaired with the help of the material **re-briefcase preparation of an added thread**.

6 - Washing the engine parts

When cleaning the parts, do not hit the parts between them since you run the risk of damaging your seats and their settings, which causes a degradation of the motor.

STANDARD SHIFT MOTOR

-the outlet water box of the cylinder head, flywheel side motor.

Preparation of the used motor for return

Clean the engine.

Drain the oil and water from the used engine.

Fix the used motor on the base and the same con-conditions than the standard shift motor:

-post the plastic caps as well as the caps,

-Put the cardboard cover covering everything.

a - Parts to be left on the used engine

Parts to be left on the used or attached enginetar in the return box:

-the oil dipstick,

-the flywheel or drive plate,

-the disc and the clutch mechanism,

- distribution cases,

-the distribution,

-the accessory crankshaft pulley,

-the cylinder head cover,

-the spark plugs.

b - Parts to be removed from the used engine

Parts not to forget to remove from the engine used:

-all pipes of the water cooling circuit,

-all water and oil contactors,

-the knock sensor,

-the oil pressure sensor,

-the cylinder identification sensor,

-the camshaft phase shifter solenoid valve,

-the ignition coils,

-the admission dealer,

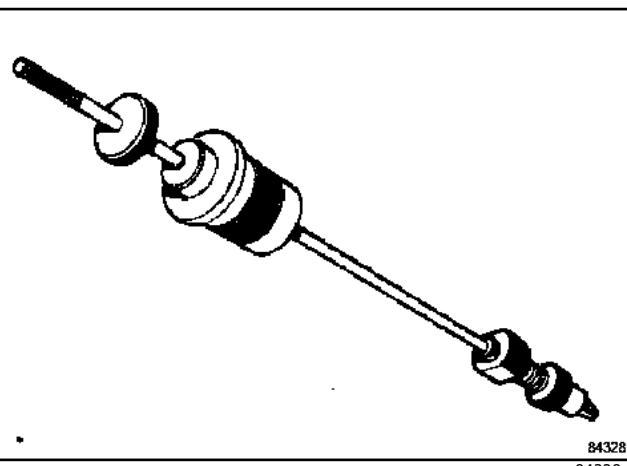
- the nozzle of the injector holder,

-the exhaust manifold,

-the accessories (alternator, air conditioning compressor-air vent, power steering pump),

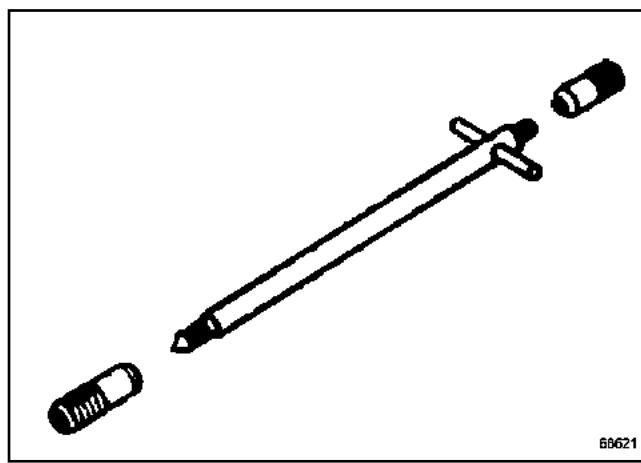
-the accessory multifunction supports,

-the engine lifting rings (if there is a difference between those of the standard shift motor and used engine),



Reference methods	Alma number-Parts cen Replacement	Designation
(He. 1382	00 00 138 20	Call briefcase you see spark plugs

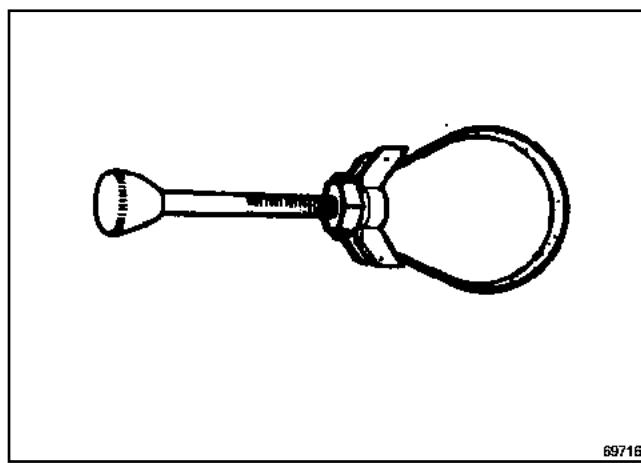
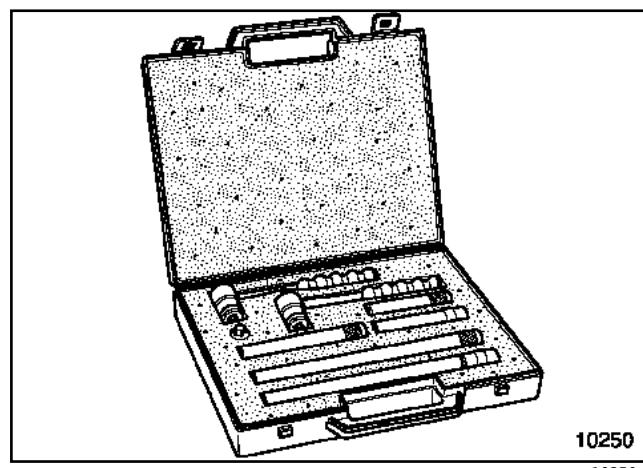
Reference methods	Alma number-Parts cen Replacement	Designation
(Emb. 880	00 00 088 000	Time of inertia



Drawing no. 68621

Reference methods	Alma number-Parts cen Replacement	Designation
(Emb. 1518	00 00 151 80	Collection from centering devices frictions of clutch

Reference methods	Alma number-Parts cen Replacement	Designation
(Mot. 104	00 01 309 90	Feet for cen-brought together and cylinder head

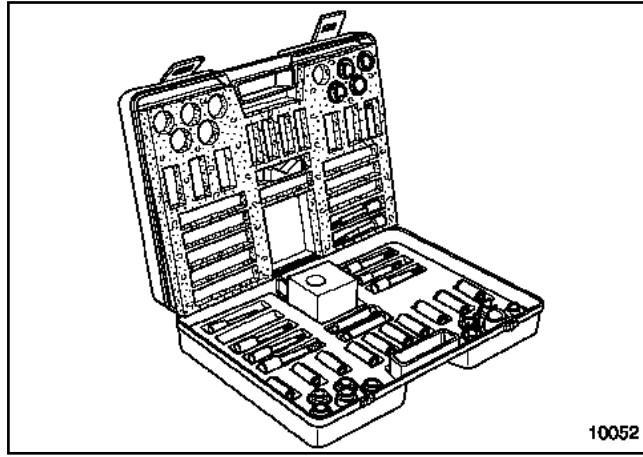


ENGINE AND LOWER ENGINE ASSEMBLY

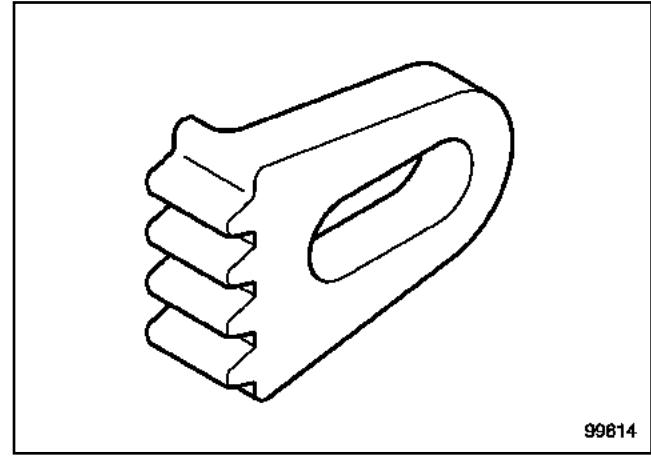
Specialized tooling

10A

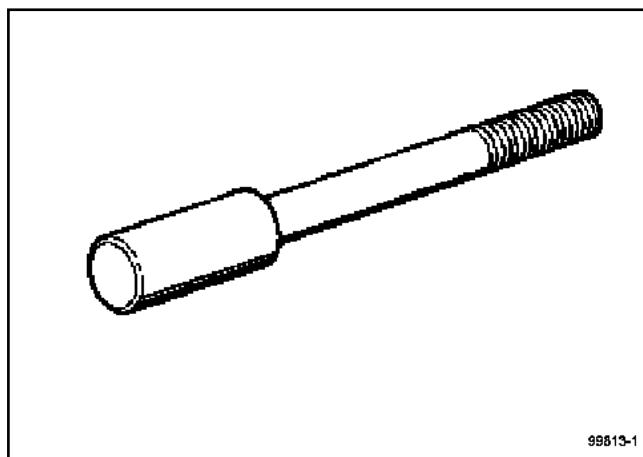
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 445	00 00 044 50	Strap wrench universal for oil filter



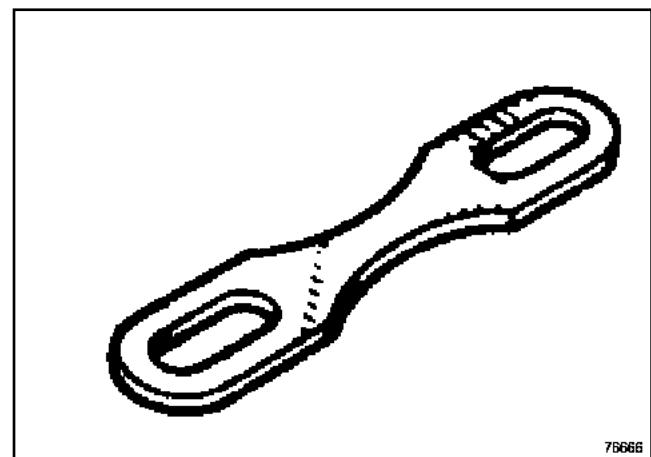
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 574-24	00 00 057 424	Useful for colo-drive the bolt piston



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 574-22	00 00 057 42	Tools for replace the piston bolts tone



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 582-01	00 00 058 201	Sector from immobilization of steering wheel motor

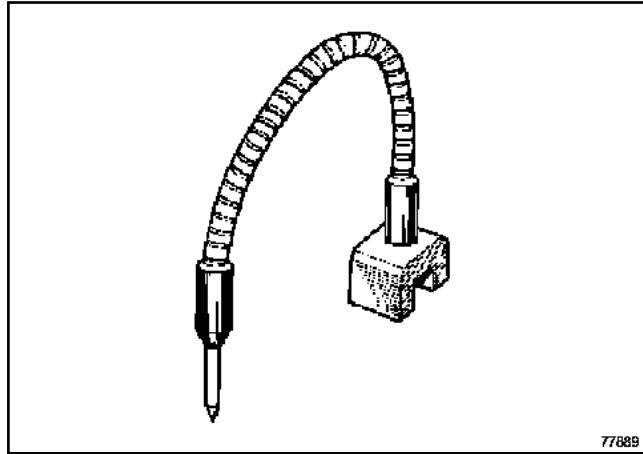


N) drawing 76554-1

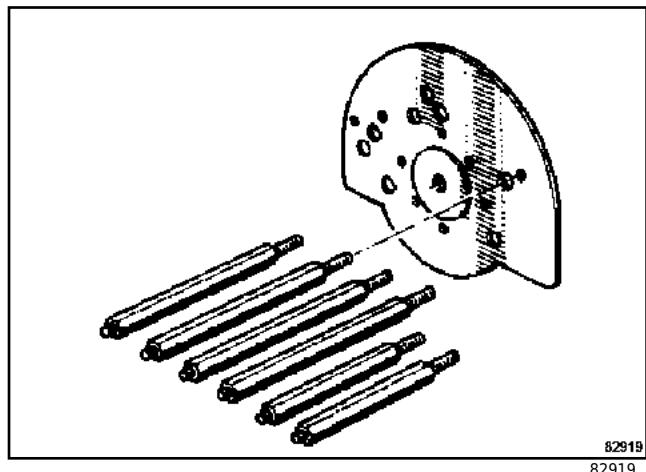
ENGINE AND LOWER ENGINE ASSEMBLY Specialized tooling

10A

Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 588	00 00 058 800	Flanges for hold the shirts

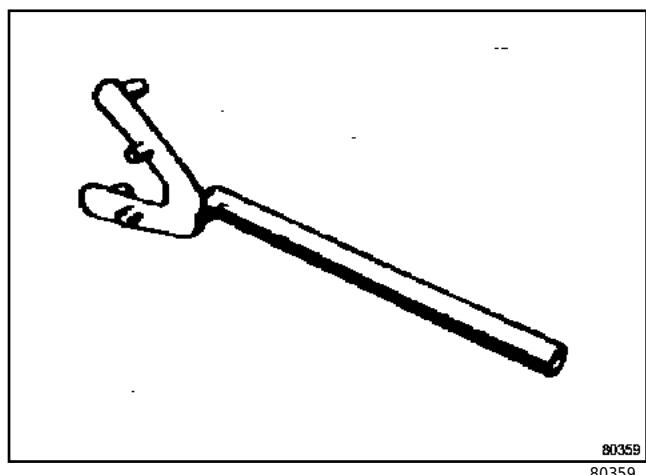
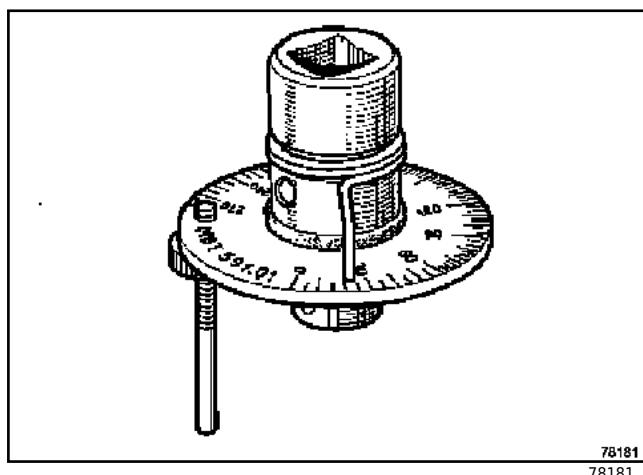


Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 591-04	00 00 059 104	Wrench angular to tighten butt (arras- tre 1/2")

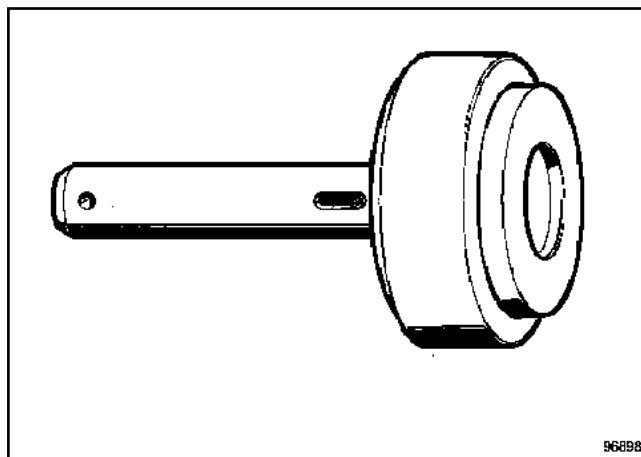


Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 591-02	00 00 059 10	Flexible faith- indexed wrench for angular from squeeze in from butt

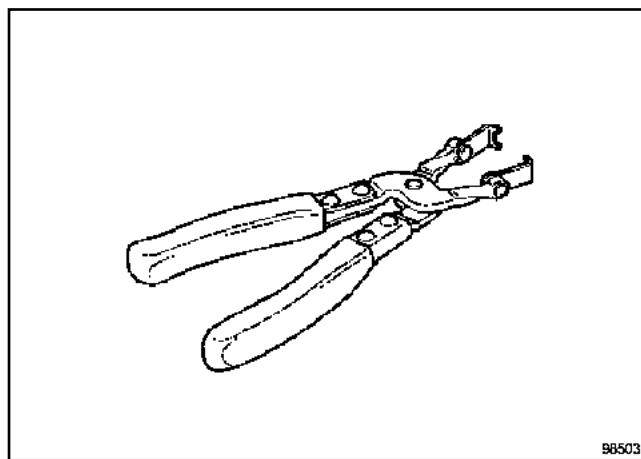
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 792-03)	00 00 079 203	Board medium engine for booth DESVIL (with stems from A to W)



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 799-01)	00 00 079 90	Immobilizer of the pine nuts for correia jagged from distribution

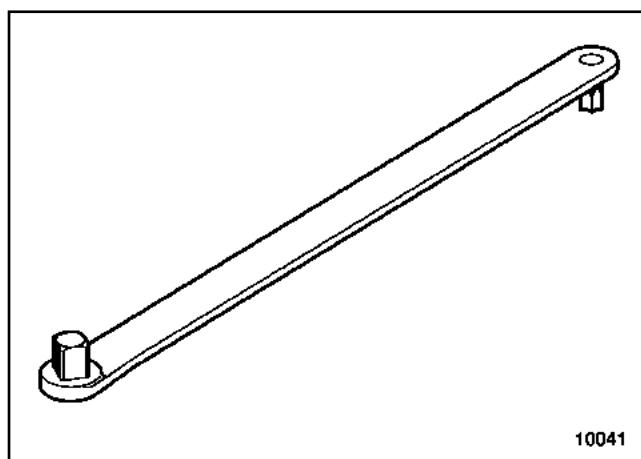
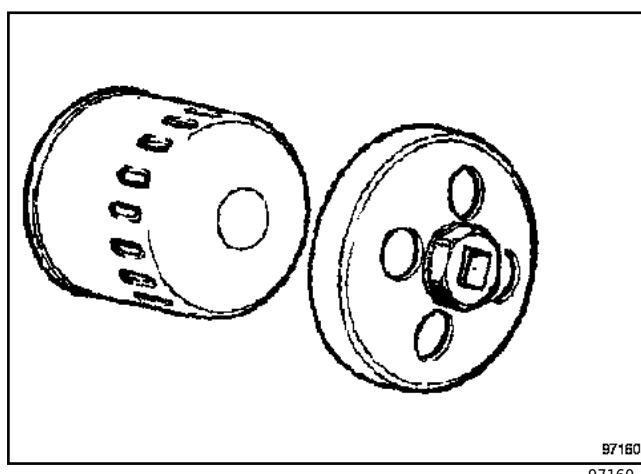


Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1329)	00 00 132 900	Remember filter of oil (dia- metro 76 mm)



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1129-01)	00 00 112 901	Useful for colo- car the board of the crankshaft side flywheel

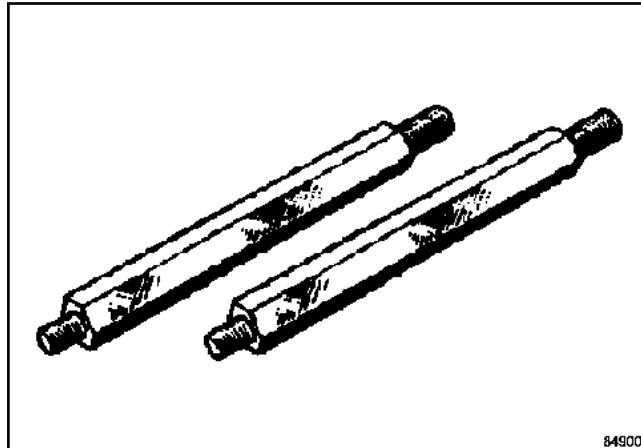
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1335)	00 00 133 50	Plier for remove the joints tails of the queue of the valves



ENGINE AND LOWER ENGINE ASSEMBLY Specialized tooling

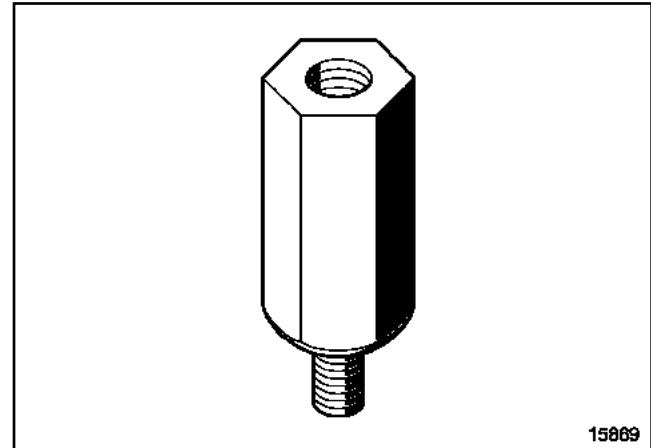
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Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1368	00 00 136 800	Tightening tool screw roller roll- ache.



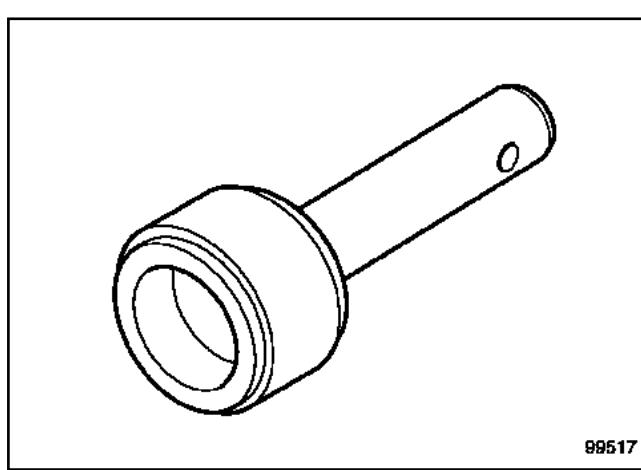
84900
84900

Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1385	00 00 138 500	Useful for colo- car the board of the crankshaft side distribution.



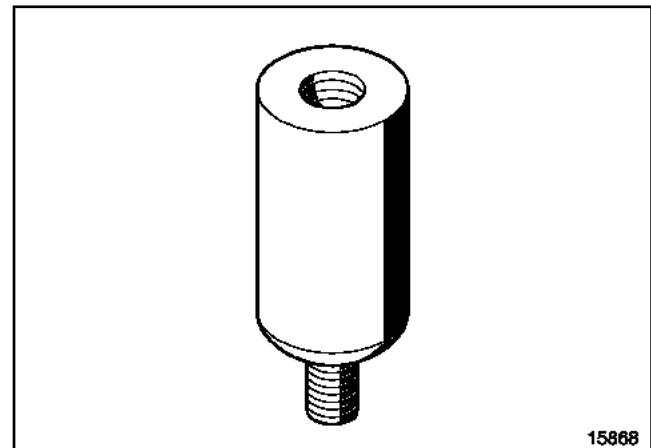
15869
15869

Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1378	00 00 137 800	Play from 2 other member (X e Y) adaptable in the board medium of motor (Against. 792-03)



99517
99517

Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1485	00 00 148 500	Useful for extract the sur- soda takers generation of bottom of Pis- tone.



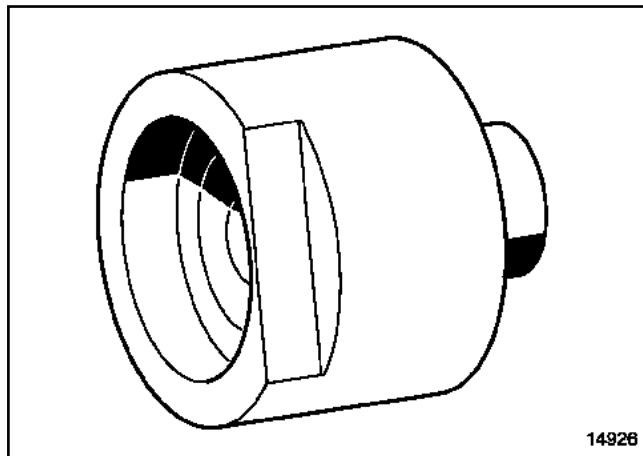
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15868

ENGINE AND LOWER ENGINE ASSEMBLY

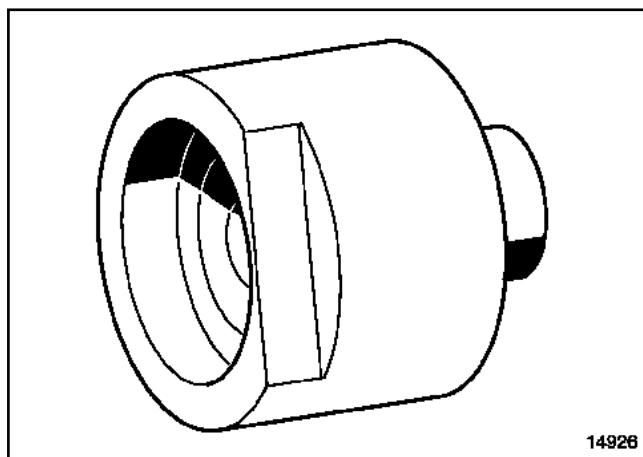
Specialized tooling

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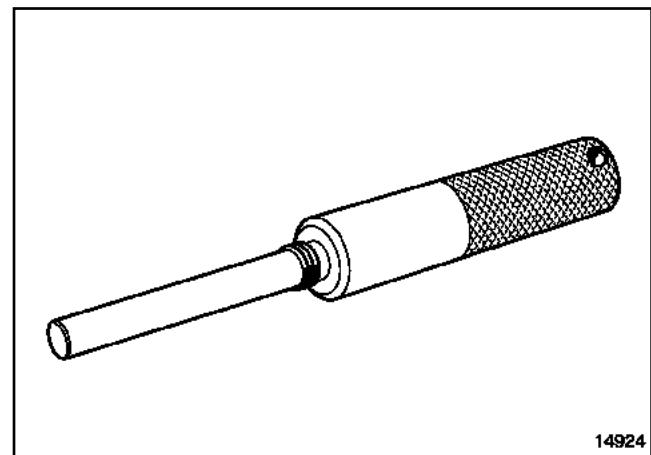
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1485-01)	00 00 148 501	Useful for extract the sur-soda takers generation of bottom of Pistone.



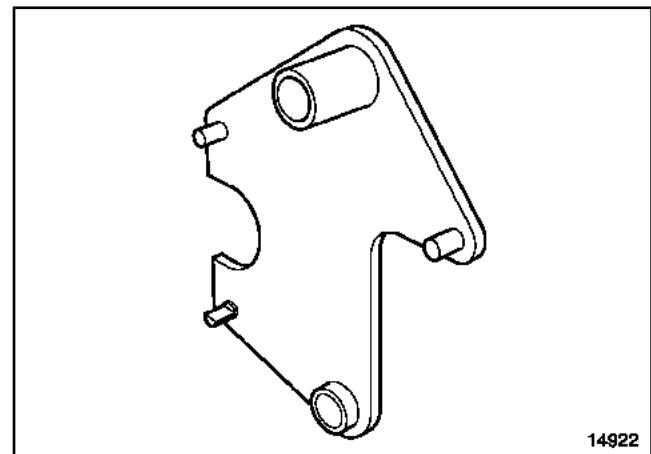
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1487)	00 00 148 700	Useful for resetting sition the tapas (from diameter 57 mm) of camshaft.



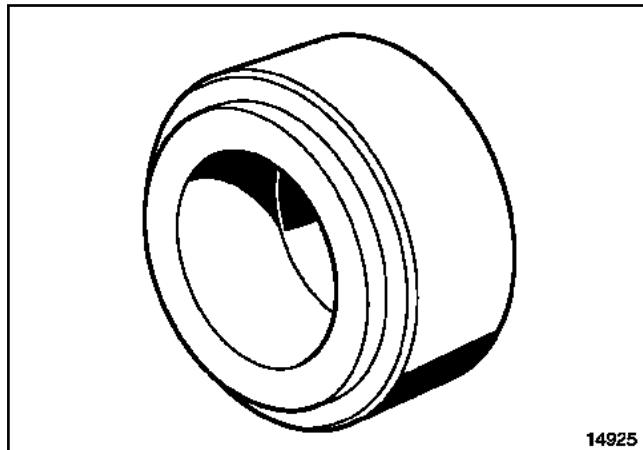
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1488)	00 00 148 800	Useful for resetting sition the tapas (from diameter 43 mm) of camshaft.



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1489)	00 00 148 900	Spike from point dead superior.

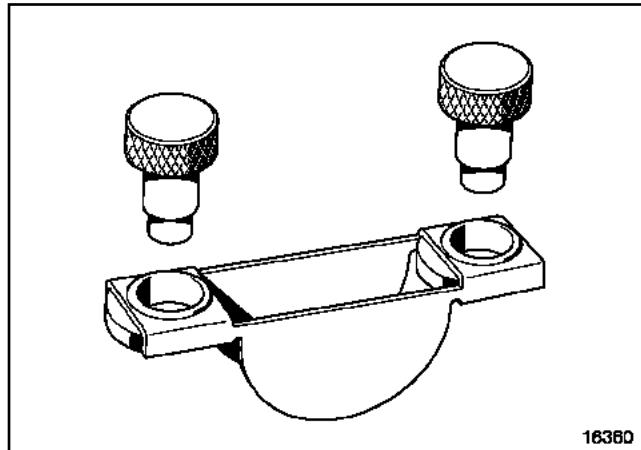


Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1490-01)	00 00 149 00	Useful from blo-wow from the trees from levas



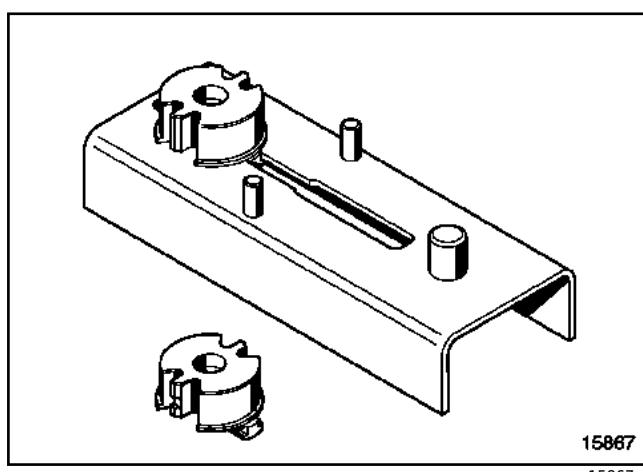
14925

Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1492)	00 00 149 200	Useful for colo-car the bearings connecting rod tees



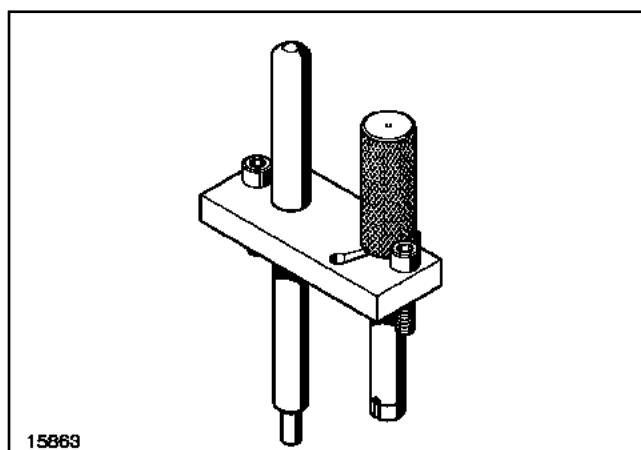
16360

Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1491)	00 00 149 100	Useful for colo-car the anti-guides together of tightness of the trees of levas.



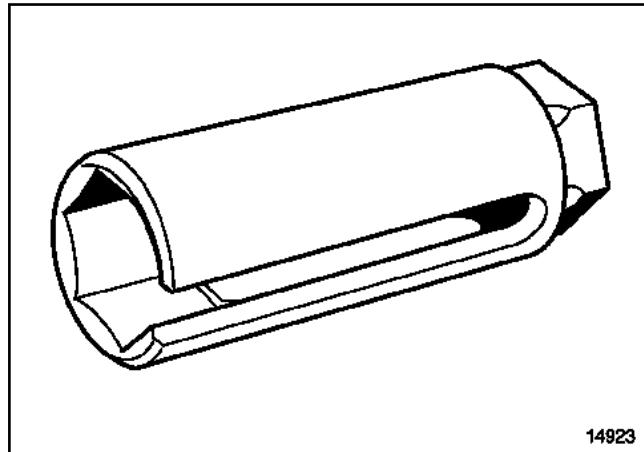
15867

Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1493-01)	00 00 149 301	useful for cen-bring bearings from support of crankshaft.

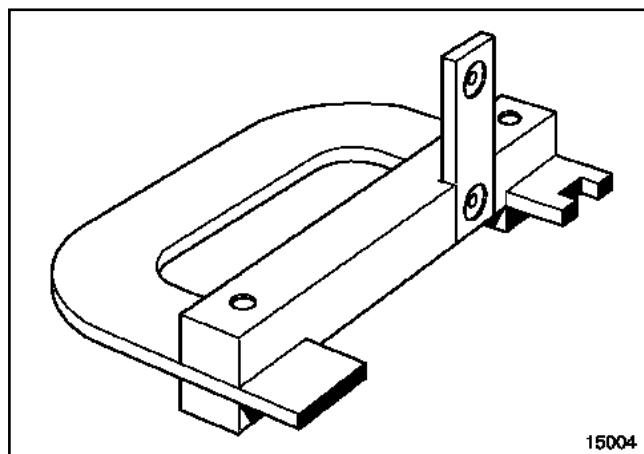


15863

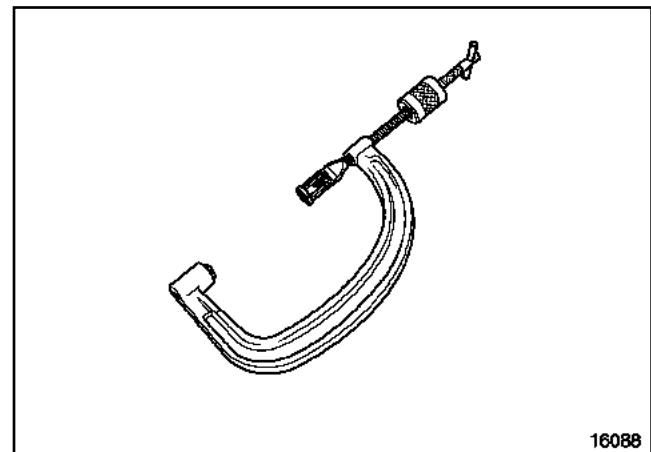
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1494	00 00 149 400	Useful for colo- car the assortments- res from refrigeration of bottom of piston.



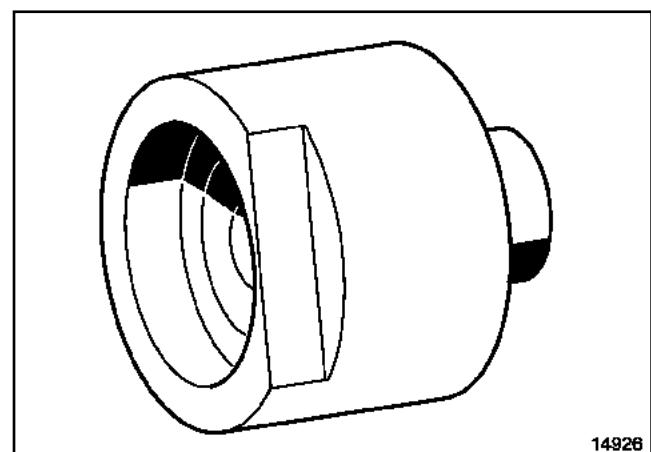
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1495	00 00 149 500	Boca from extraction and replacement from the probes of oxygen.



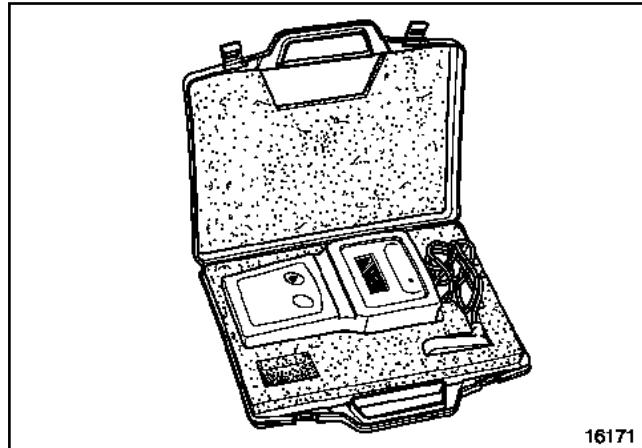
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1496	00 00 149 600	Useful for draft from the trees from levas.



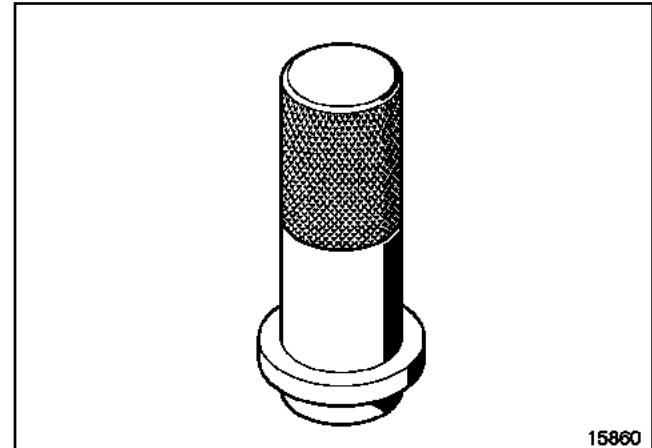
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1502	00 00 150 200	Compressor of valve springs the womb.



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1503	00 00 150 300	Useful for colo- car the pastilla on the way from butt.

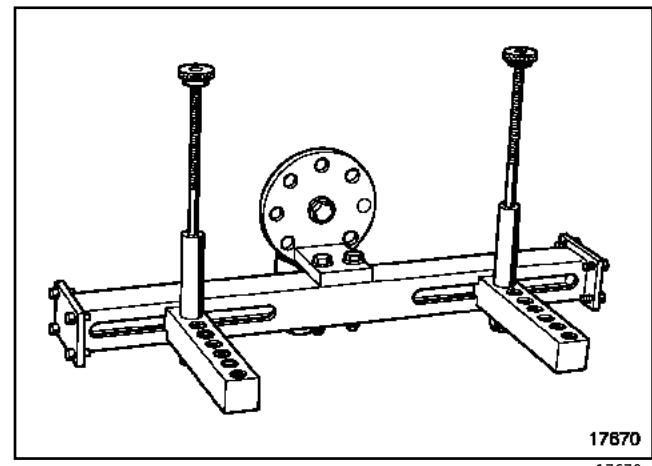
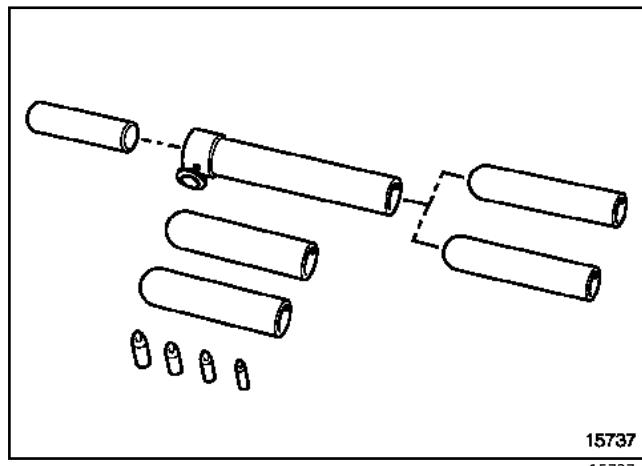


Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1511	00 00 151 100	Useful for colo- car the together from the queues of valves.

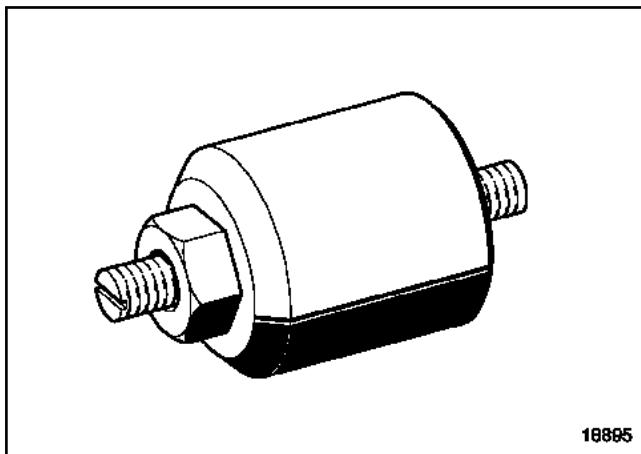


Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1505	00 00 150 50	Apparatus from tension control Zion from cor- in row.

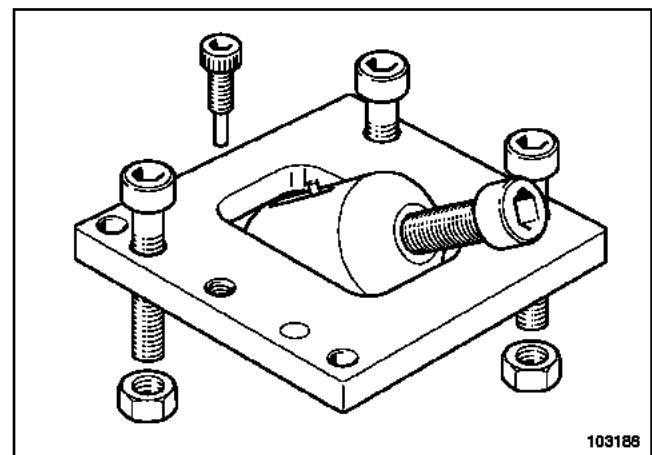
Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1513	00 00 151 300	Useful for colo- because the electro- valve of out of phase.



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1573	00 00 157 30	Cylinder head support.

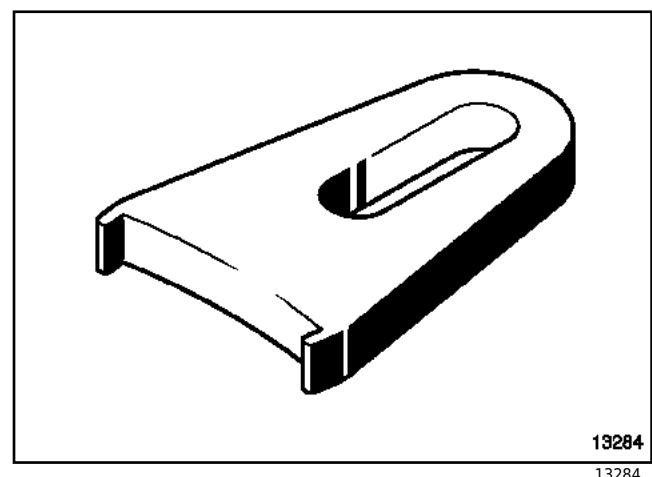
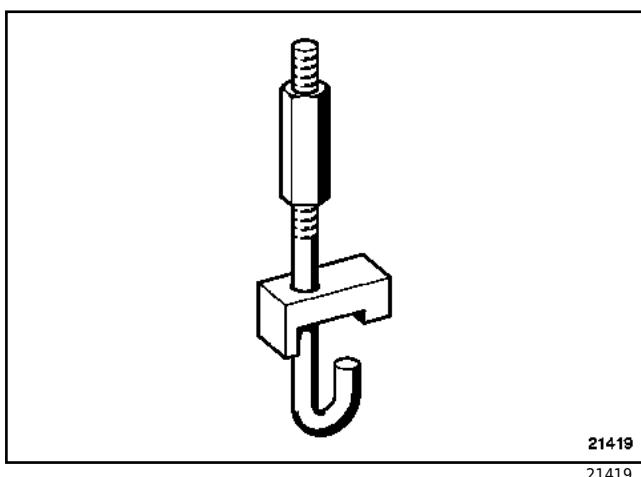


Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1638	00 00 163 800	Tension tool belt accessories.



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1632	00 00 163 200	Useful for colo- car the together new from tightness of the trees of levas.

Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1669	00 00 166 900	Useful from mon- thrust thrust cam jador square.



Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1677	00 00 167 700	Sector from immobilization of steering wheel motor.

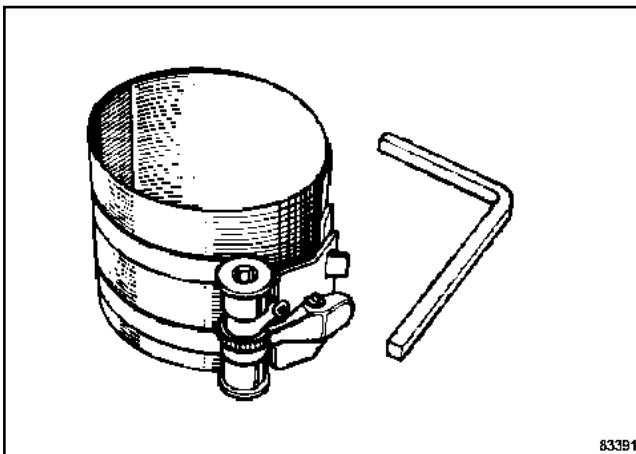


Reference methods	Alma number- Parts cen Replacement	Designation
(Mot. 1715	77 11 381 71	Apparatus from tension control of the correa (cancel Y substitute al Against. 1505).

ENGINE AND LOWER ENGINE ASSEMBLY

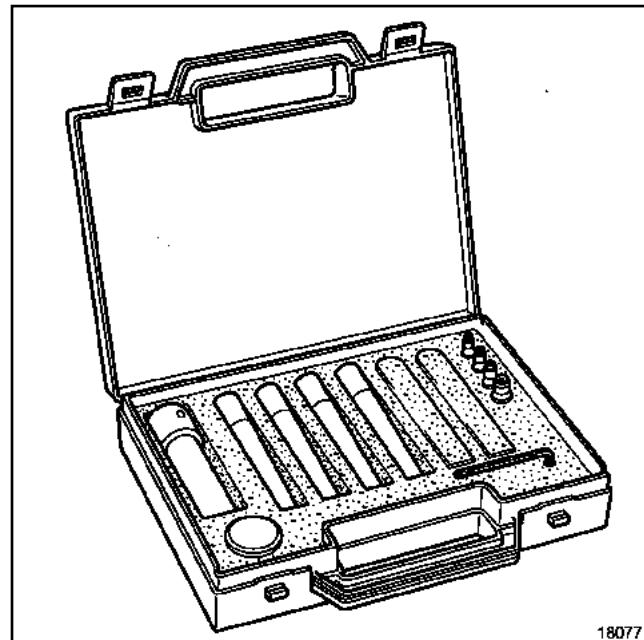
10A

ESSENTIAL MATERIAL

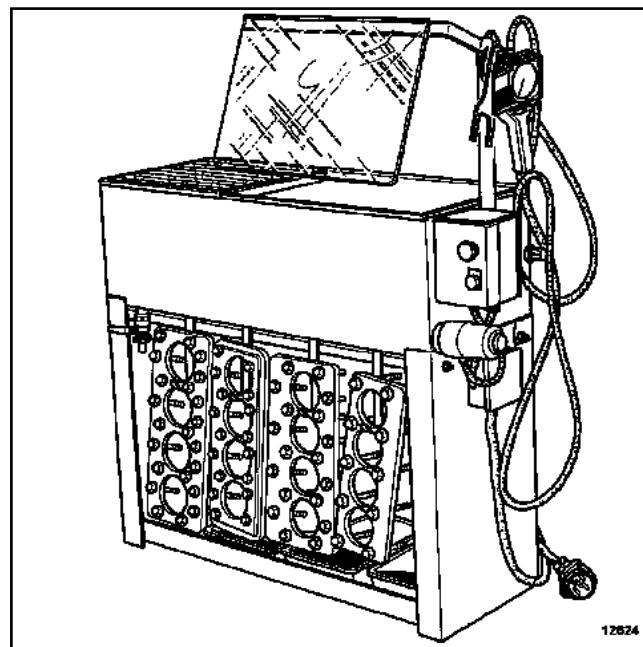


83391
83391

Piston mounting bushing with piston ringcough in shirt



18077
18077



12624

cylinder head test container

case for the installation of the gaskets of the valve tail

crankshaft bearing puller

Angle tightening wrench

repair case for an added thread

1/2 "standard long 22mm bushing (four length of 12.7 mm)

1/2 "standard 8/12/14 female star socket (square of 12.7)

1/2 "standard 30/40 male star socket

fine tweezers

ENGINE AND LOWER ENGINE ASSEMBLY

Material

10A

**gun for the extraction of silicone
cordzone**

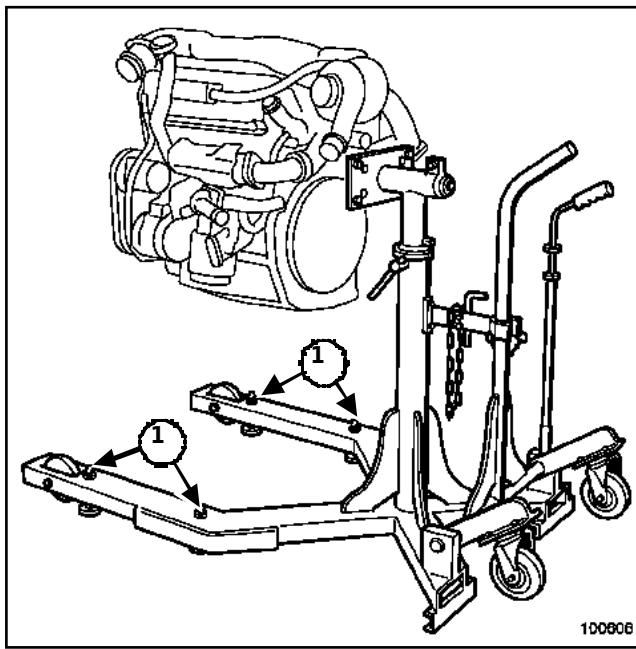
load positioner

organ support

Essential specialized tooling

Against. 1378	Stems X & Y used bles with stem A adaptable al stand DESVIL
Against. 792-03	Board medium of motor for stand DESVIL

PREPARING THE ENGINE FOR PLACING IT ON THE SUPPORT



IMPORTANT

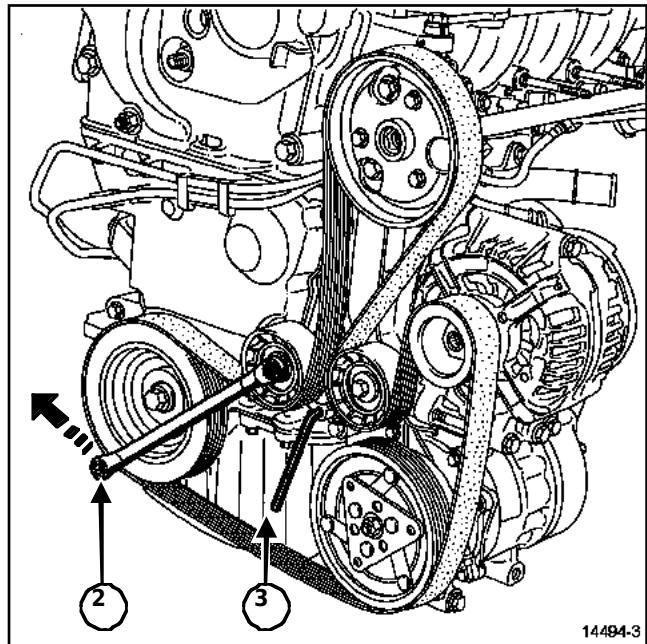
To work safely on the engine, it is imperative to use the new support or to get that the manufacturer modifies the old bracket. Also, when the motor is on the stand, put the skids (1) are imperative.

Change the engine oil.

Remove the electrical wiring from the motor.

7 -

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o
730 or 732 or 750 - K4M, and 700 or 701 or 704 or 706
708 o 709 o 710 o 711 o 712 o 714 o 720 o 724 o
734 o 740 o 742 o 743 o 744 o 745 o 748 o 750
o 752 or 753



Pivot the tensioner with the help of the wrench (2) until to the left to loosen the belt.

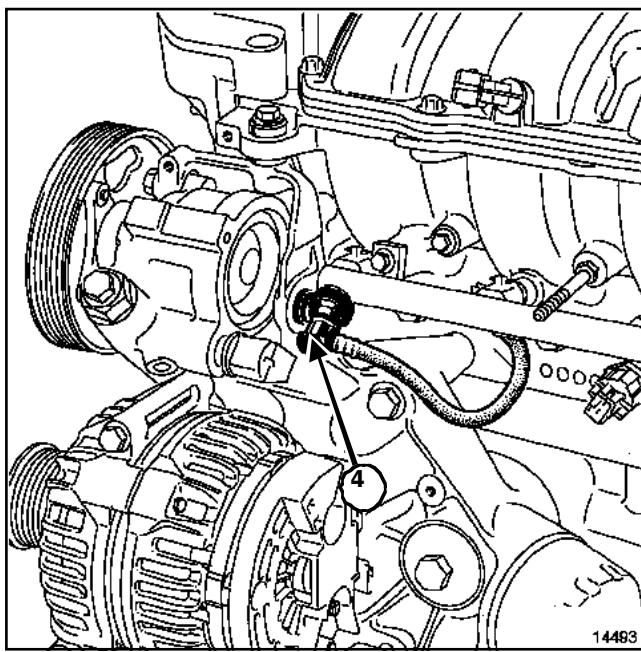
Lock the tensioner using a hexagonal spanner
6 mm3

Remove the accessory strap.

ENGINE AND LOWER ENGINE ASSEMBLY

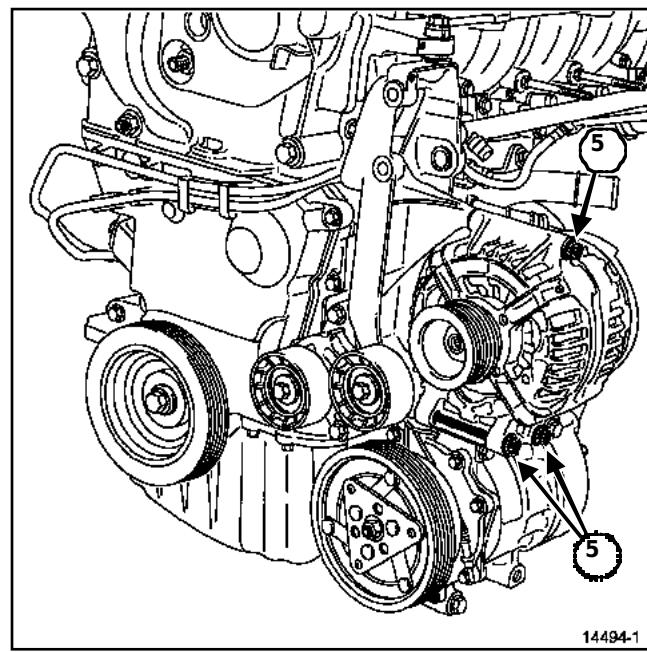
Motor: Undressed

10A



14493

14493

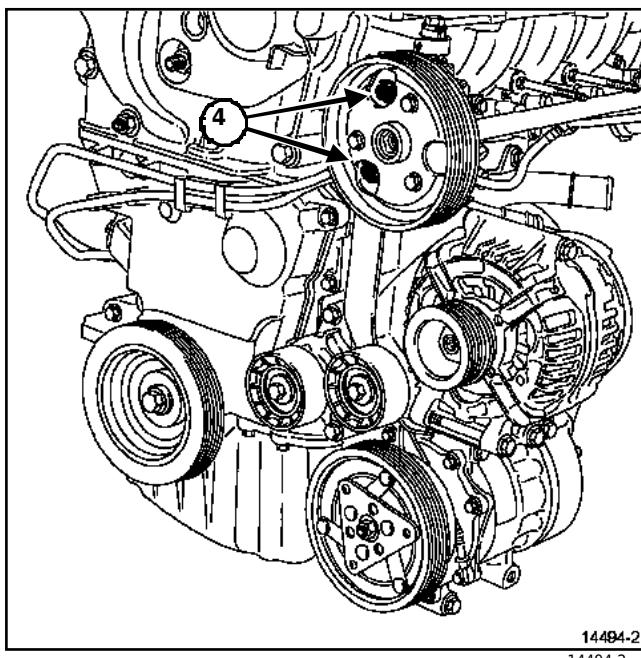


14494-1

14494-1

Extract:

- the alternator fixing bolts (5),
- the alternator.

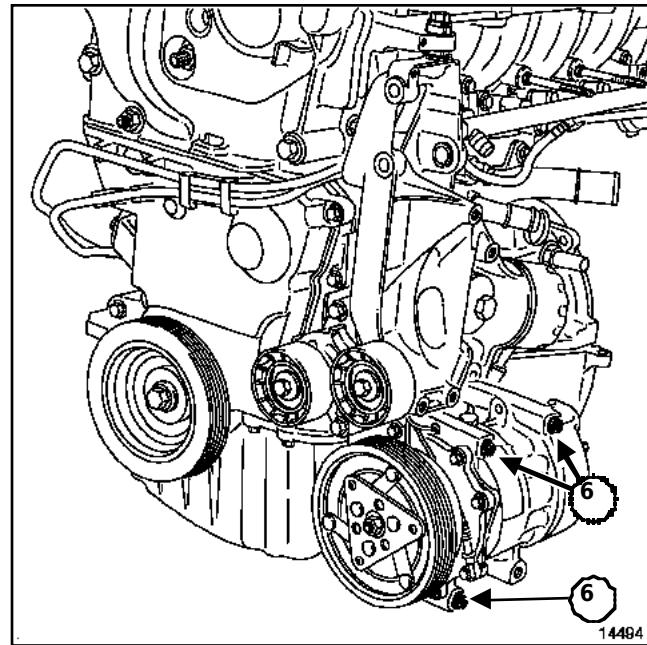


14494-2

14494-2

Extract:

- the steering pump mounting bolts (4)assisted,
- the power steering pump.



14494

14494

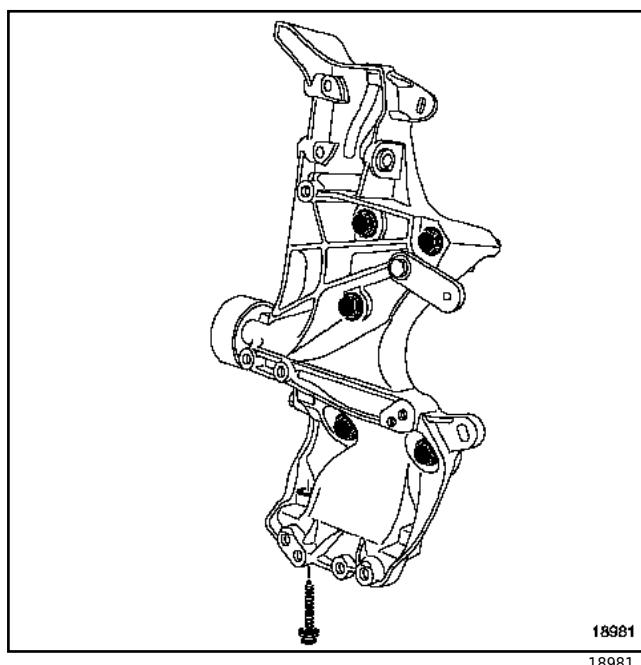
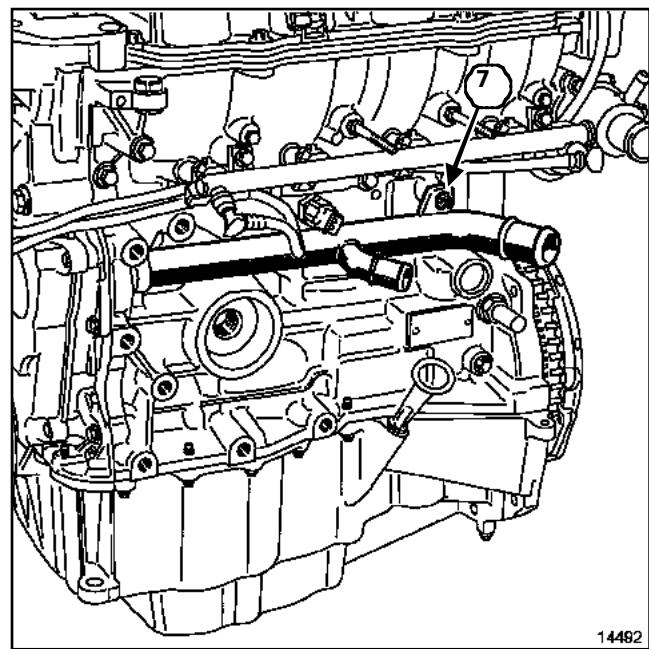
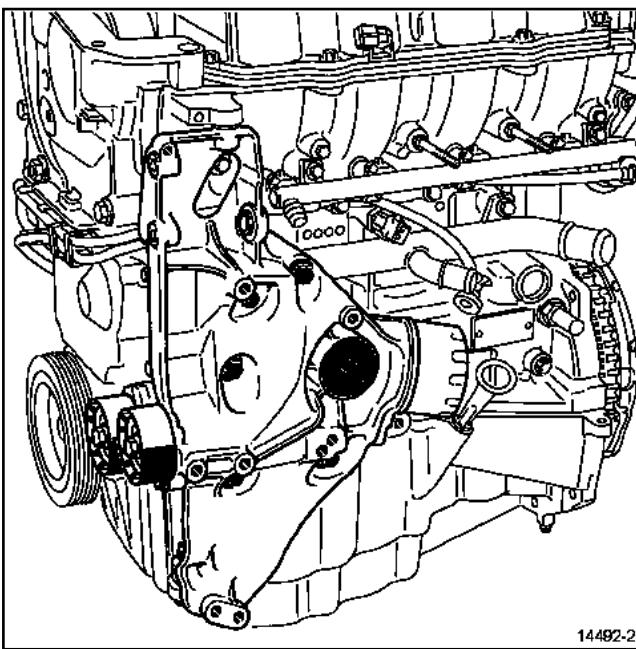
Extract:

- the screws (6) of the air conditioner compressorarea,
- the air conditioner compressor.

ENGINE AND LOWER ENGINE ASSEMBLY

Motor: Undressed

10A



Extract:

- the fixing screws of the multifunction bracket,
- the multifunction support.

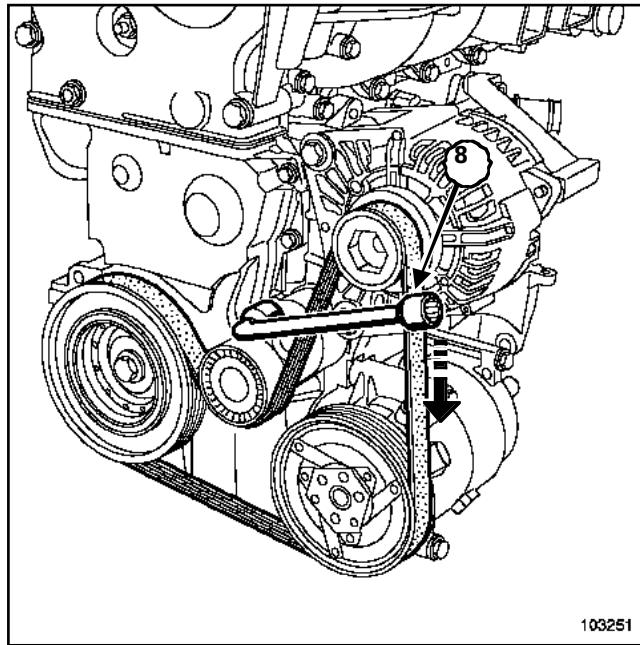
ENGINE AND LOWER ENGINE ASSEMBLY

Motor: Undressed

10A

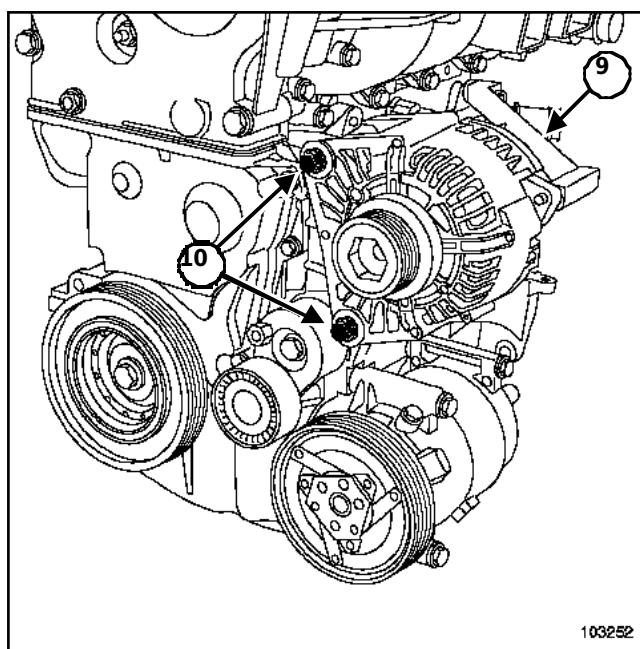
8.

K4 o K4M, y 730 o 760 o 761



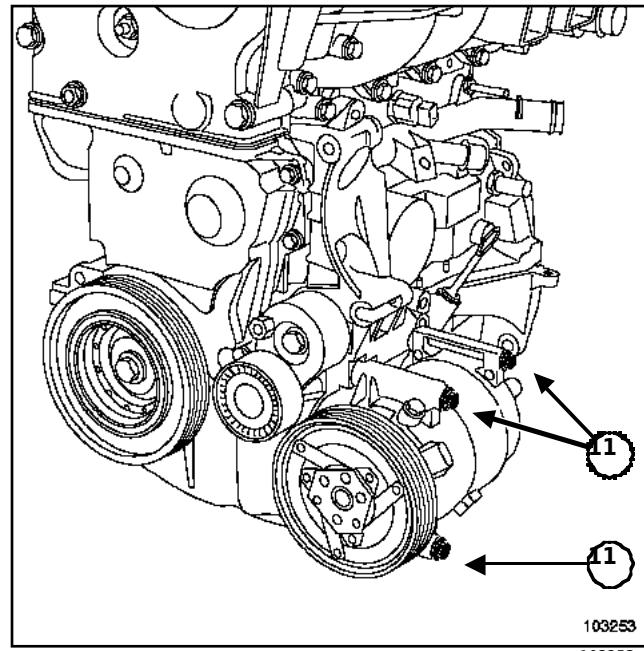
Pivot the key (8) to the left to un-tighten the belt.

Remove the accessory strap.



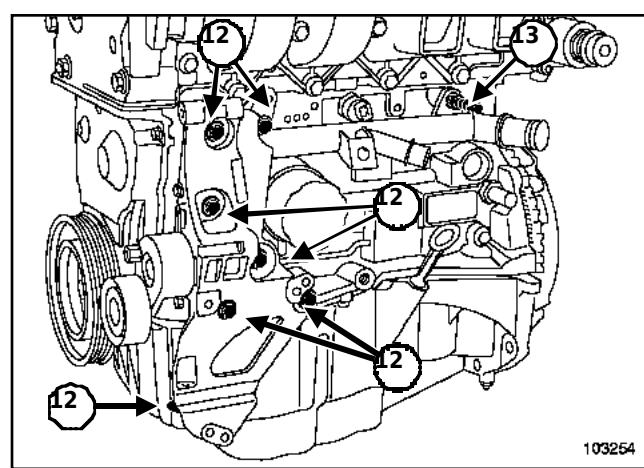
Extract:

- the alternator reinforcement crutch (9),
- the alternator fixing bolts (10),
- the alternator.



Extract:

- the bolts (11) for fixing the air compressor air dictionary,
- the air conditioner compressor.



Extract:

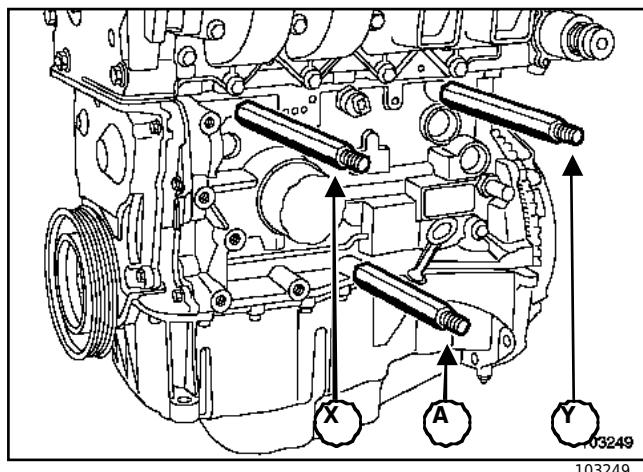
- the screws (12) of the multifunction support,
- the multifunction support,
- the inlet water pipe fixing screw (13) day of the water pump,
- the inlet water pipe of the water pump.

ENGINE AND LOWER ENGINE ASSEMBLY

Motor: Undressed

10A

9 - Fixing the motor on the support Mot. 792 - 03



Fit the motor terminals (**A**), and the (Mot. 1378 (**Y**)) on the engine block.

X

Fix the motor equipped with the rods in the holes 20 - 32 - 33 of the motor plate (Mot. 792-03).

ENGINE AND LOWER ENGINE ASSEMBLY

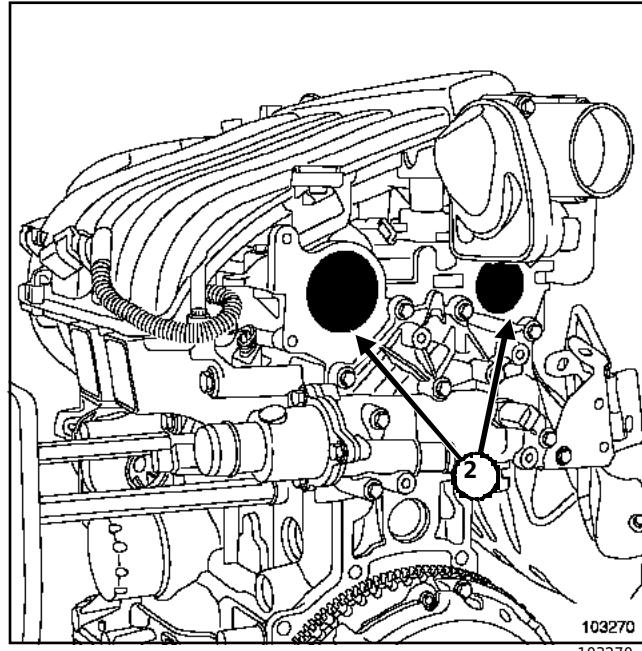
Timing - cylinder head: Removal

10A

K4M

Essential specialized tooling

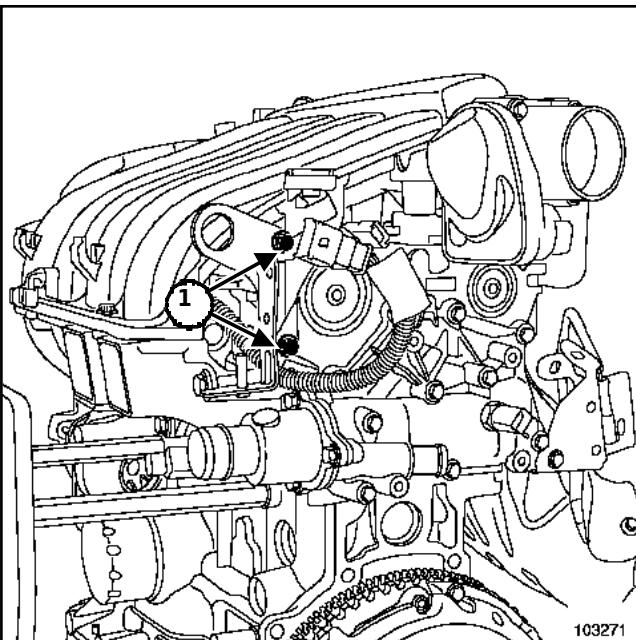
Against. 1489	Peg of setting top dead center
Against. 582-01	Immobilization sector flywheel (K motors)
Against. 1677	Immobilization sector flywheel(F engines)
Against. 1490-01	Lock and draft the pulleys of the treescam them
Against. 1573	Cylinder head support



103270
103270

I - EXTRACTION OF THE DISTRIBUTION

K4M, and 760 or 761

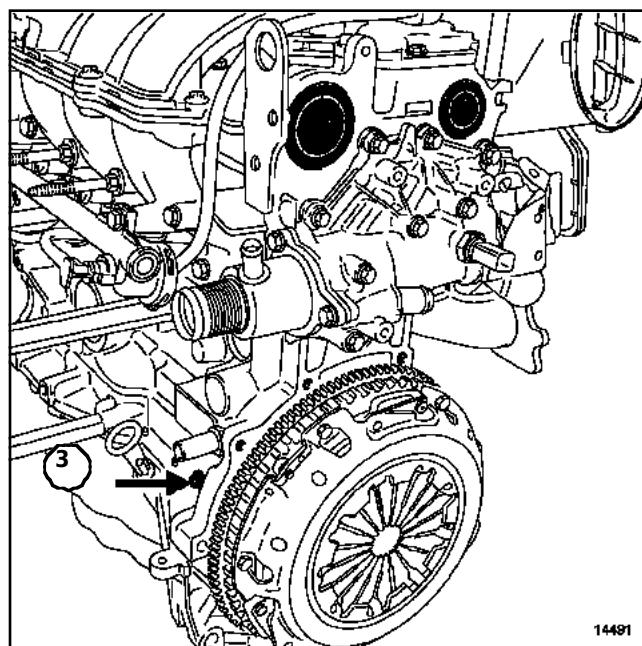


103271 Remove the lifting ring (1) from

the flywheel sidemotor.

Drill in the center the end caps of the camshafts (2) using a screwdriver.

Remove the plugs from the end of the axle shafts.you go using a screwdriver.



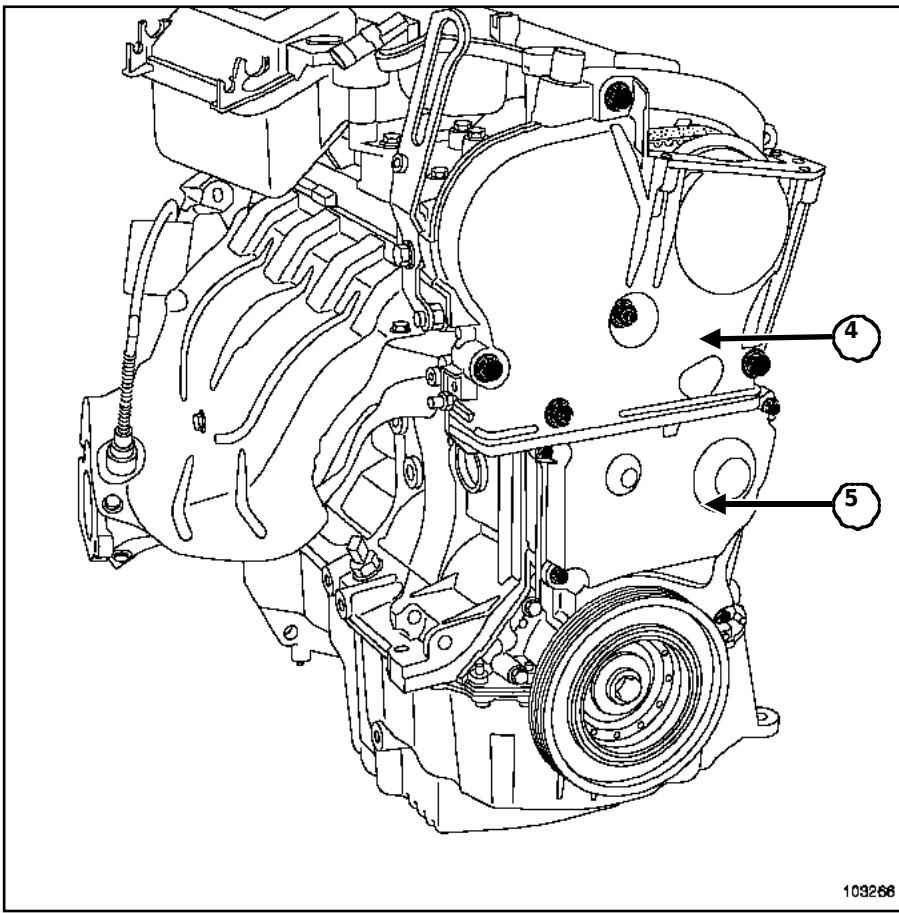
14491
14491

Remove the cap from the Super-3

**ENGINE AND LOWER ENGINE
ASSEMBLY**Timing - cylinder head: Removal

10A

K4M



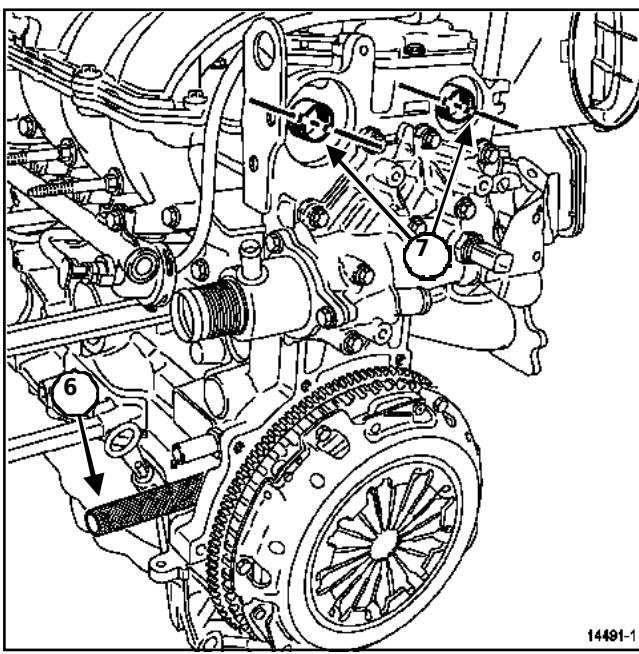
103266

103266

Extract:

- the lower timing cover (5),
- the upper timing cover (4).

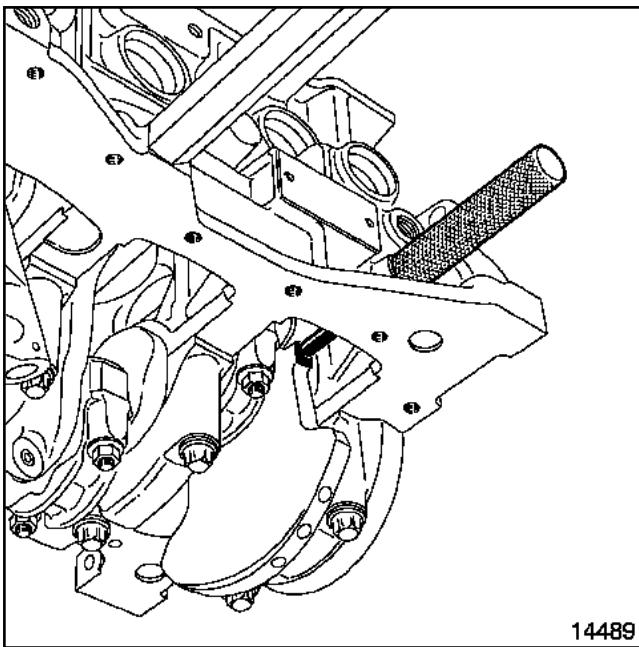
K4M



14491-1

Position the grooves (7) of the camshafts nearly horizontal and off-center downward rotating the crankshaft in its direction of operation (sense time distribution side).

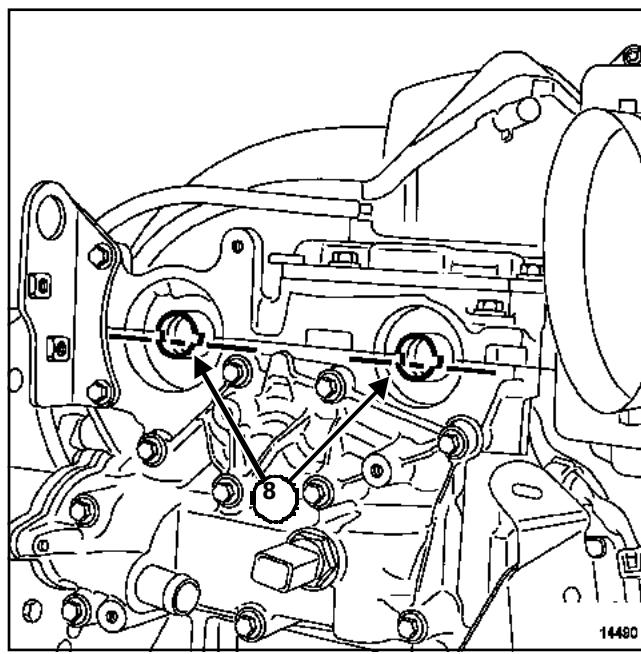
Screw in the top dead center pin (Mot. 6)



14489
14489

Rotate the crankshaft in its running direction(clockwise direction distribution side), until the cylinder head leans on the upper neutral pin.

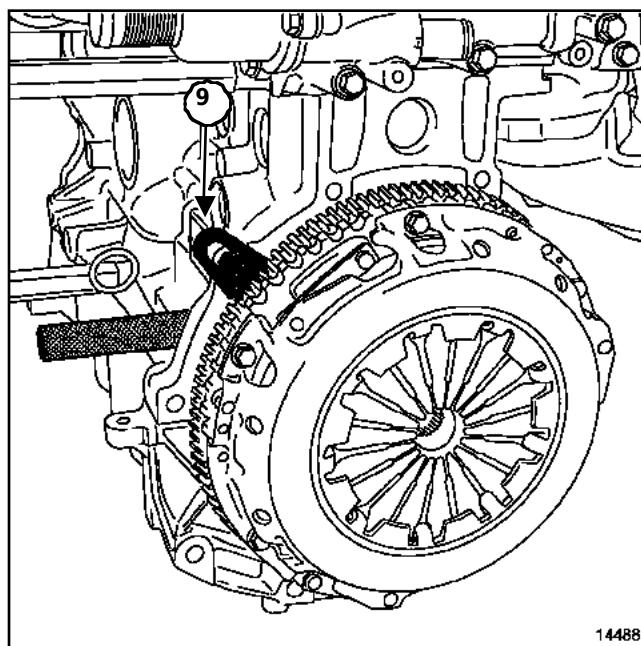
rior.



14490

The grooves (8) of the camshafts must be horizontal and off-center down.

Extract the Top Dead Center pin (Mot. 1489)



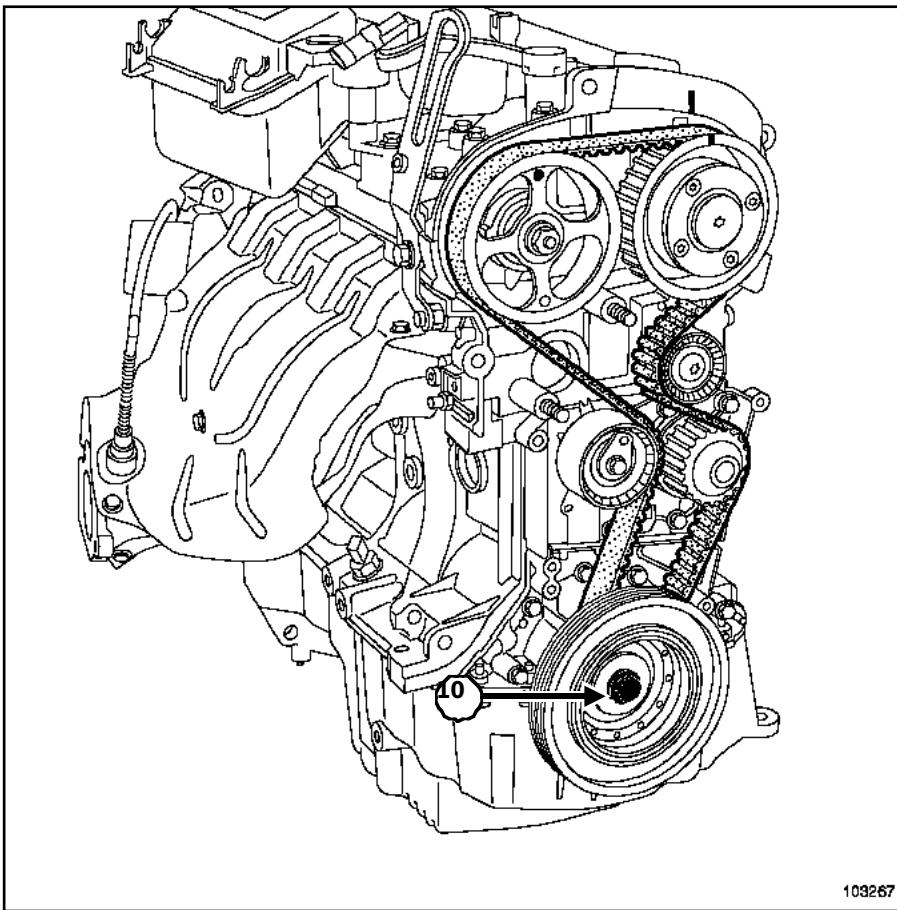
14488
14488

Refit the flywheel lock (9) (Mot. 582-01) o (Mot. 1677).

**ENGINE AND LOWER ENGINE
ASSEMBLY**Timing - cylinder head: Removal

10A

K4M



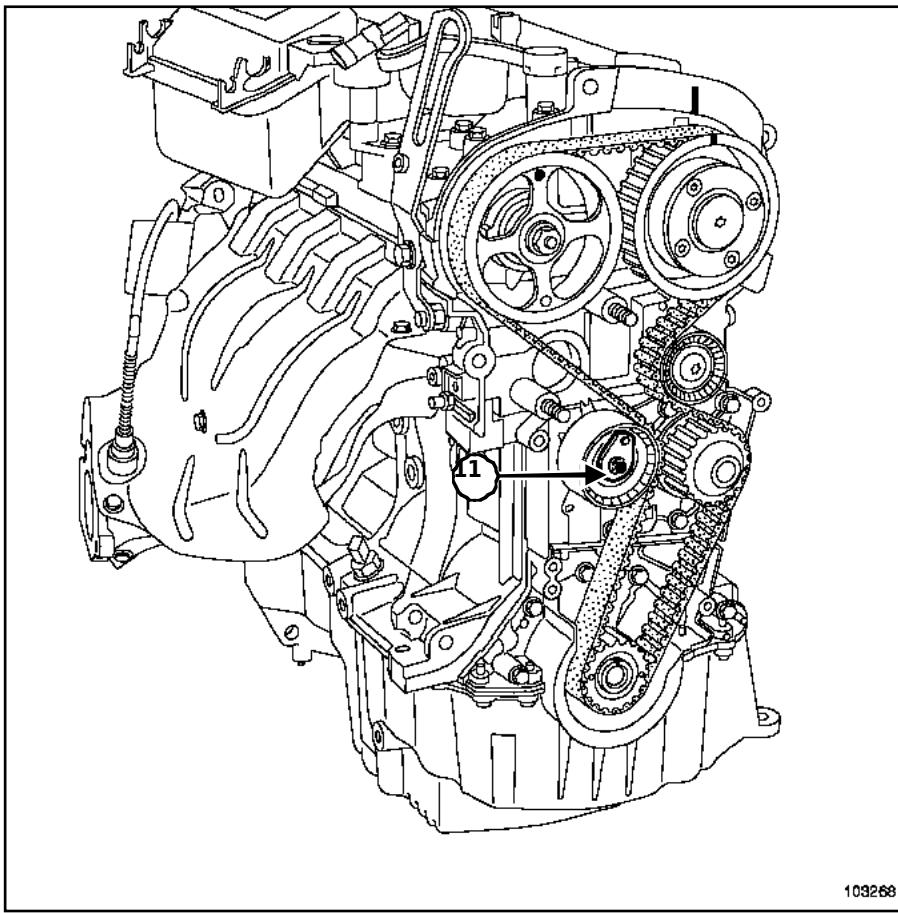
Extract:

-the fixing screw (**10**) of the accessories pulleyof the crankshaft,

-the crankshaft accessory pulley.

Remove the flywheel lock (**9**) (Mot. 582-01) o
(Mot. 1677).

K4M



103268

103268

Loosen the nut (**11**) of the timing tensioner pulley.

ATTENTION

No do fall the pinion from distribution of crankshaft when removing the timing belt.

Extract:

- the distribution winder roller,
- the timing belt,
- the crankshaft timing pinion.

ENGINE AND LOWER ENGINE ASSEMBLY

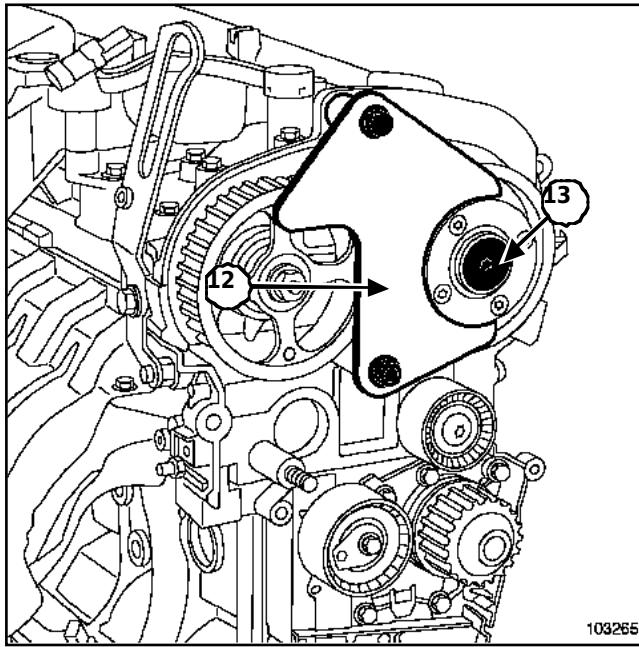
Timing - cylinder head: Removal

10A

K4M

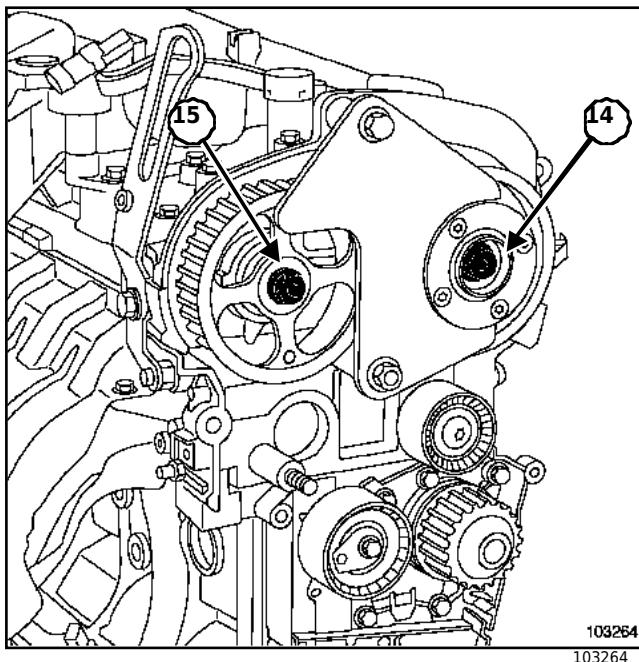
II - CYLINDER HEAD REMOVAL

K4M, and 760 or 761



Fit the pulley immobilizer (12) (Mot.1490-01) on the camshaft pulleys

Remove the plug (13) from the phase shifter pulley of the intake camshaft.



Extract:

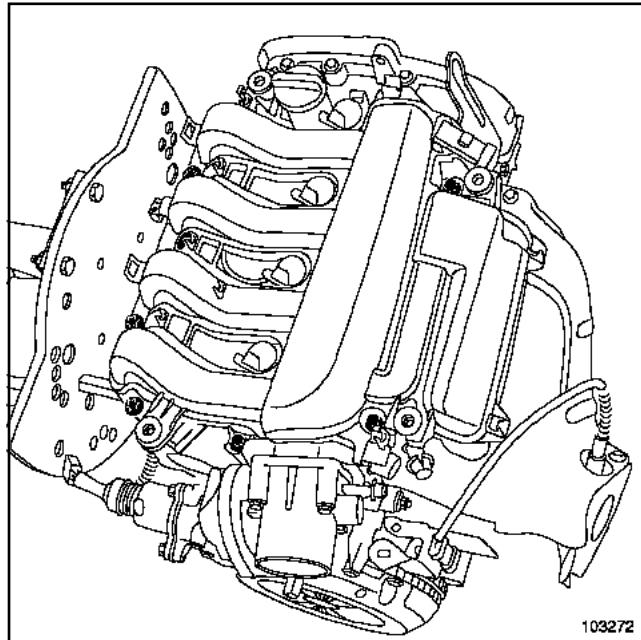
-the bolt (14) of the shaft shifting pulley
intake cams,

-the nut (15) of the camshaft pulley is-
cape,

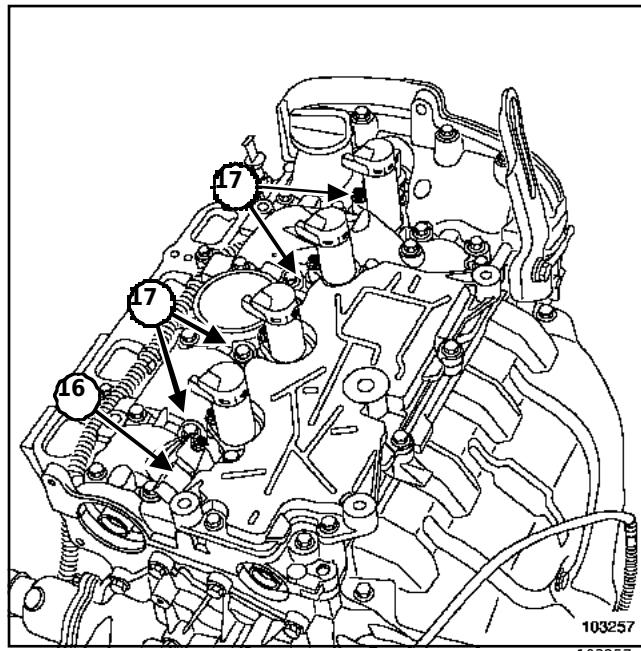
-the immobilizer of the shaft pulleys-
vas (Mot. 1490-01),

-the intake camshaft phase shifter,

-the exhaust camshaft pulley.



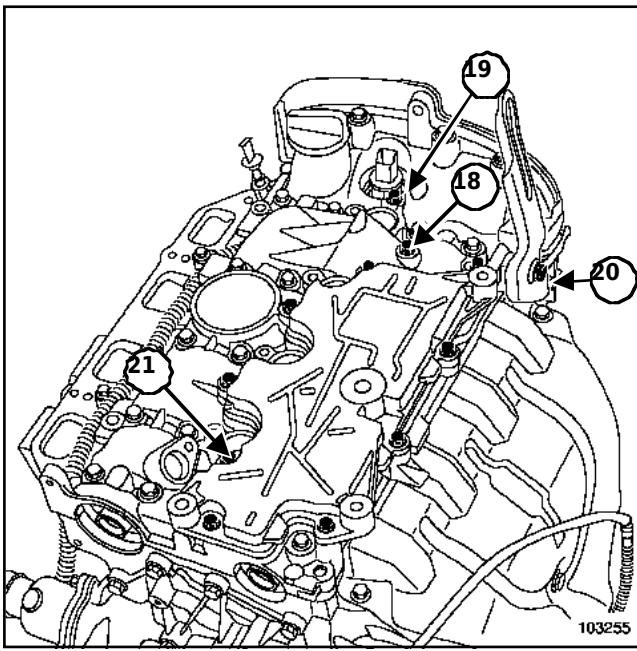
Remove the intake manifold.



Extract:

-the cylinder identification sensor (16),
-the ignition coils (17).

K4M



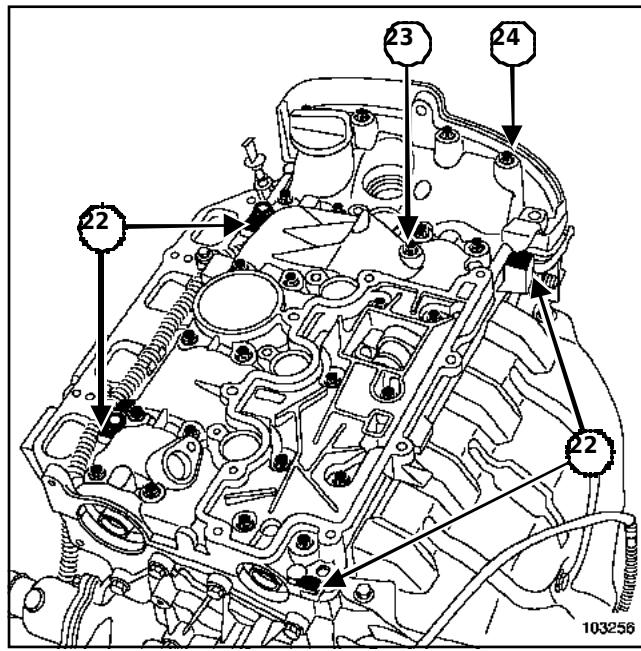
103255

ATTENTION

Do not remove the screw (**18**) as it serves as stop for the square cam follower.

Extract:

- the shaft phase shifter control solenoid valve intake cams (**19**),
- the engine lifting ring on the distributor side-
tion (**20**)
- the nine screws (**21**) for fixing the decanter of
oil,
- the oil decanter.



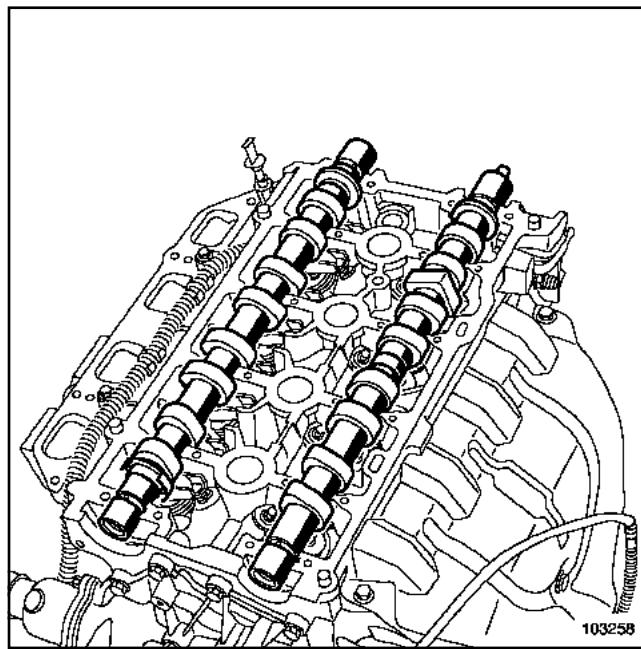
103256

ATTENTION

Do not remove the screw (**23**) as it serves as stop for the square cam follower.

Remove the twenty-four fixing screws (**24**) from the cylinder head cover.

Detach the cylinder head cover vertically by tapping over the lugs (**22**) with a bronze bar.



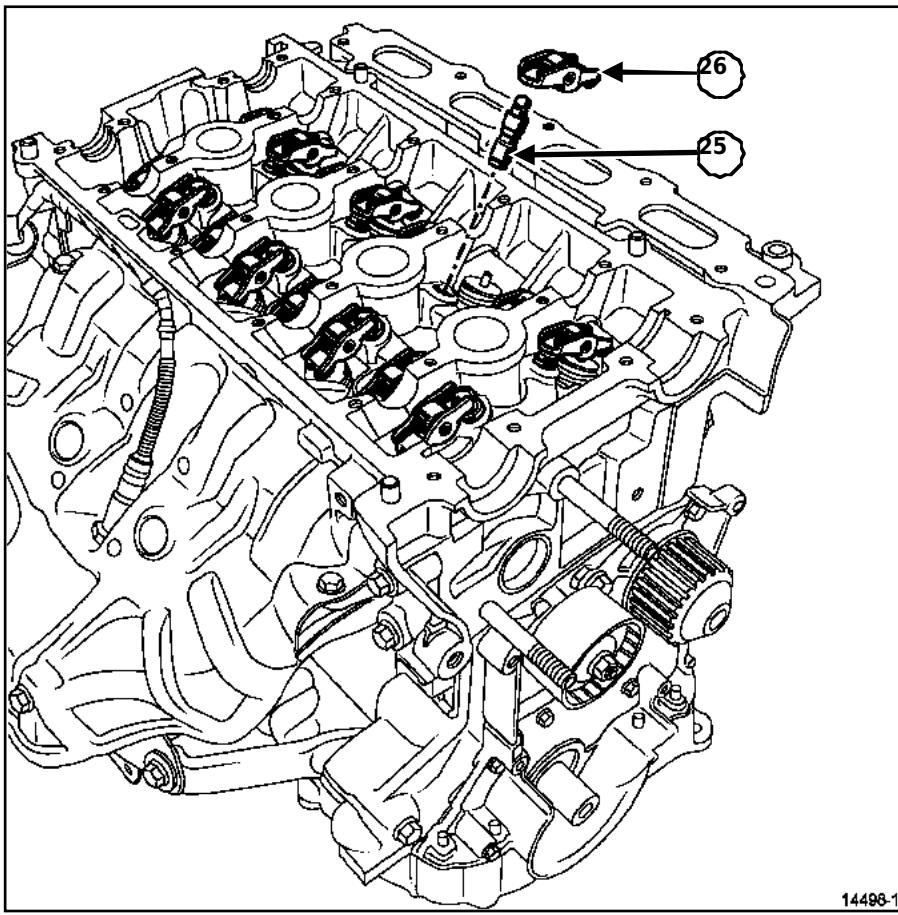
103258

Remove the intake and exhaust
camshafts.

**ENGINE AND LOWER ENGINE
ASSEMBLY**Timing - cylinder head: Removal

10A

K4M



14498-1

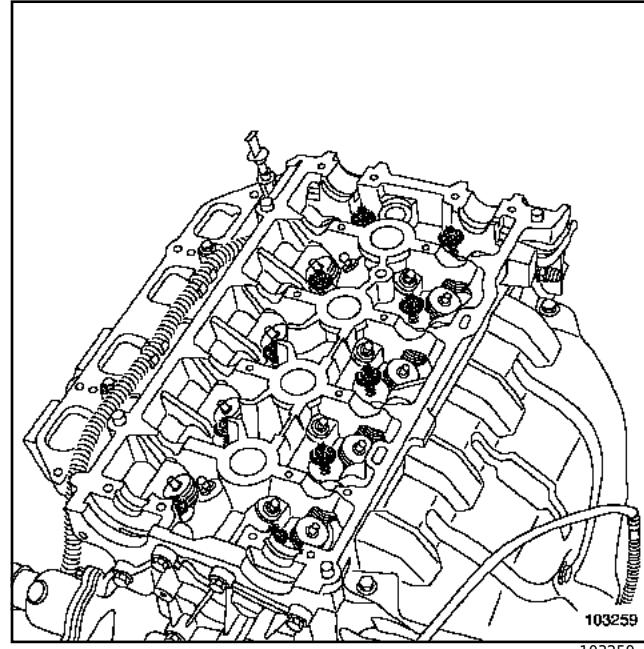
14498-1

Extract:

- the rocker arms (**26**),
- the hydraulic stops (**25**)

NOTE:

It is imperative to fit the hydraulic stops vertically, to avoid any risk of deburring hydraulic stops.



103259

103259

Extract:

- the cylinder head bolts,
- the cylinder head.

**ENGINE AND LOWER ENGINE
ASSEMBLY**Timing - cylinder head: Removal

10A

K4M

Place the cylinder head on the cylinder head support (Mot. 1573).

Remove the cylinder head gasket from the cylinder block.

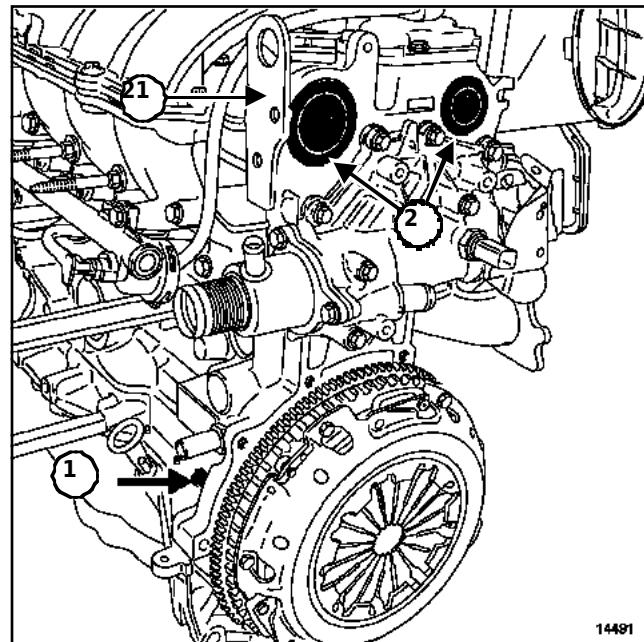


Essential specialized tooling	
Against. 1489	Peg of setting top dead center
Against. 582-01	Immobilization sector flywheel (K motors)
Against. 1677	Immobilization sector flywheel (F engines)
Against. 1368	Useful to tighten tor-tensioner roller bearings eccentric. Torx key from 8 Y square from 12.7
Against. 1490-01	Lock and draft the pulleys of the trees cam them
Against. 1573	Cylinder head support

I -EXTRACTION OF THE DISTRIBUTION

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730 or 732 or 750 - K4M, and 700 or 701 or 704 or 706

708 o 709 o 710 o 711 o 712 o 714 o 720 o 724 o 734 o 740 o 742 o 743 o 744 o 745 o 748 o 750 o 752 or 753



14491
14491

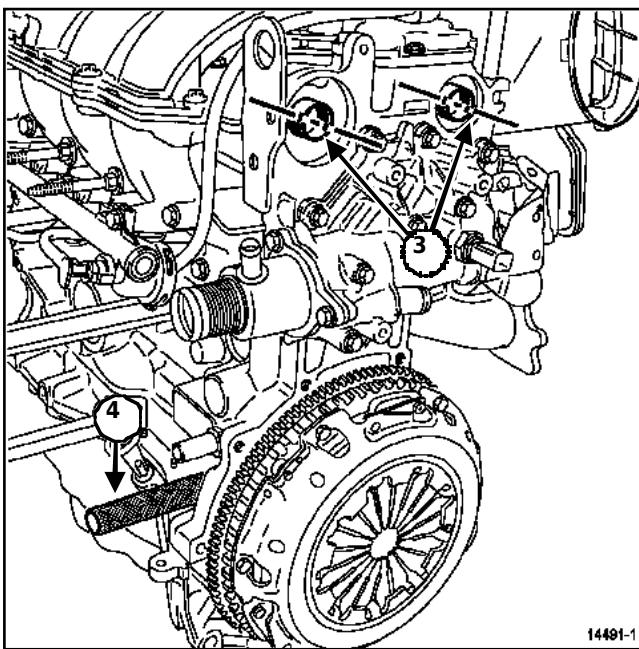
Remove the lifting eye of the motor (21) sideflywheel.

Drill the plugs (2) at the end of the camshafts using a screwdriver.

Extract:

-the end caps of the camshafts used twisting a screwdriver,

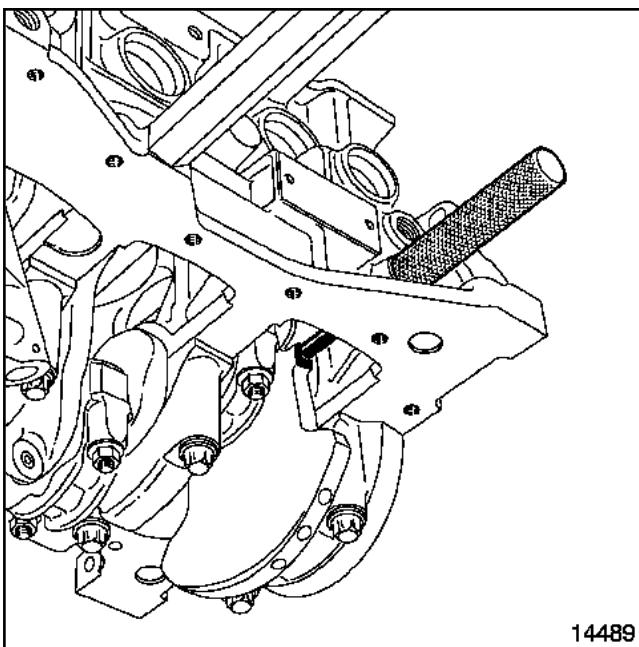
-the cap (1) of the top dead center pin.



14491-1

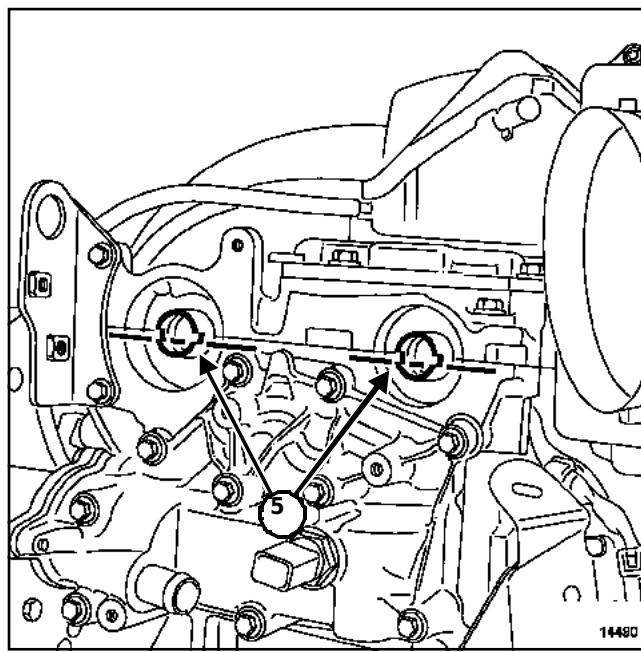
Position the grooves (3) of the camshafts nearly horizontal and off-center downward rotating the crankshaft in its direction of operation (sense time distribution side).

Screw in the spike from point dead superior (4). (Mot. 1489)



14489

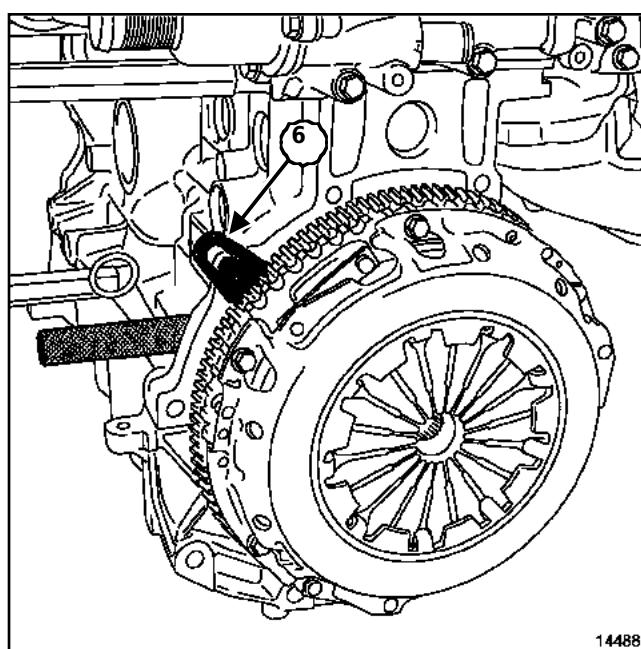
Rotate the crankshaft in its running direction (clockwise direction distribution side), until the cylinder number leans on the upper neutral pin.



14490

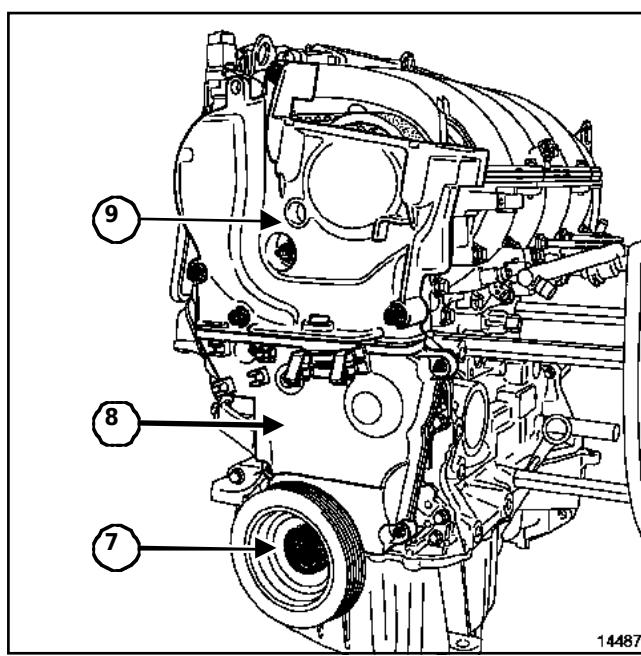
The grooves (5) of the camshafts must be horizontal and off-center down.

Extract the Top Dead Center pin (Mot. 1489)

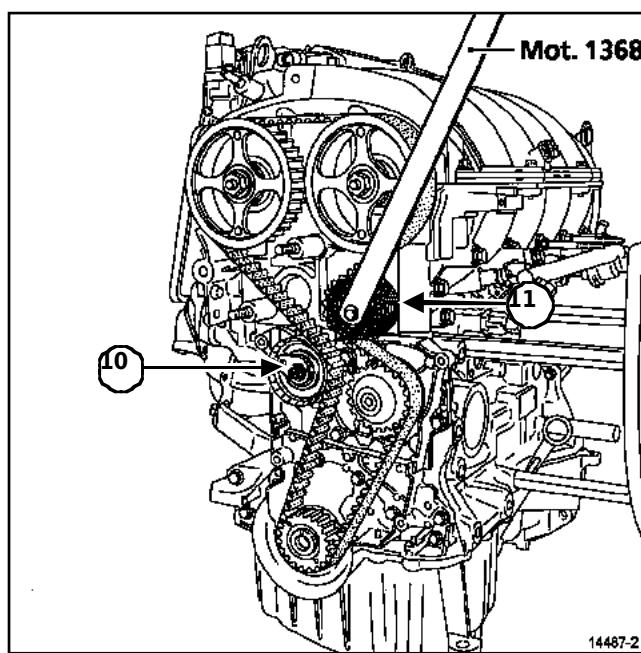


14488

Refit the engine flywheel lock (6)
(Mot. 582-01 o (Mot. 1677)).



14487



14487-2

Extract:

- the crankshaft accessory pulley, (7)
- the lower timing cover, (8)
- the upper timing cover (9),
- the engine flywheel lock (Mot. 582-01) or (Mot. 1677).

Loosen the nut (10) of the timing tensioner pulley.

tion.

ATTENTION

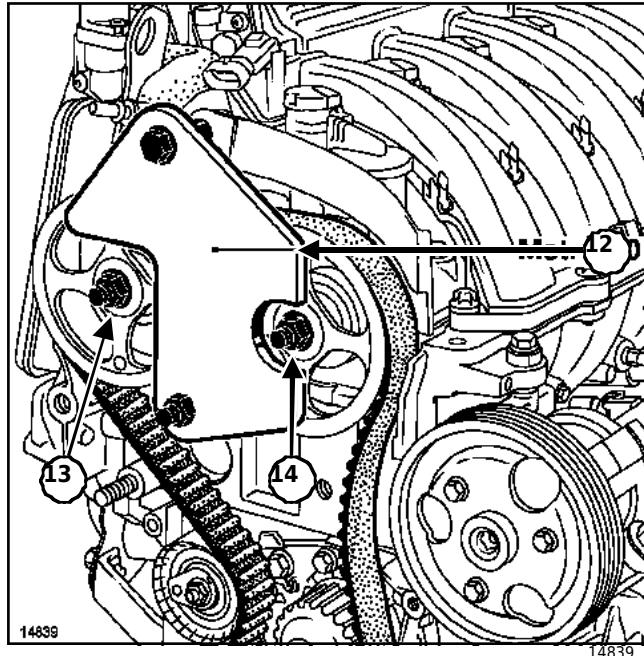
No do fall the pinion from distribution of crankshaft when removing the timing belt.

Extract:

- the distribution winder roller (11) with helpdel (Mot. 1368),
- the timing belt,
- the crankshaft timing pinion.

II - CYLINDER HEAD REMOVAL

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730
or 732 or 750 - K4M, and 700 or 701 or 704 or 706708
o 709 o 710 o 711 o 712 o 714 o 720 o 724 o 734 o 740
o 742 o 743 o 744 o 745 o 748 o 750 o 752 or 753



Fit the immobilizer on the shaft pulleys (**12**)
(Mot. 1490-01) on the shaft pulleyscam balls.

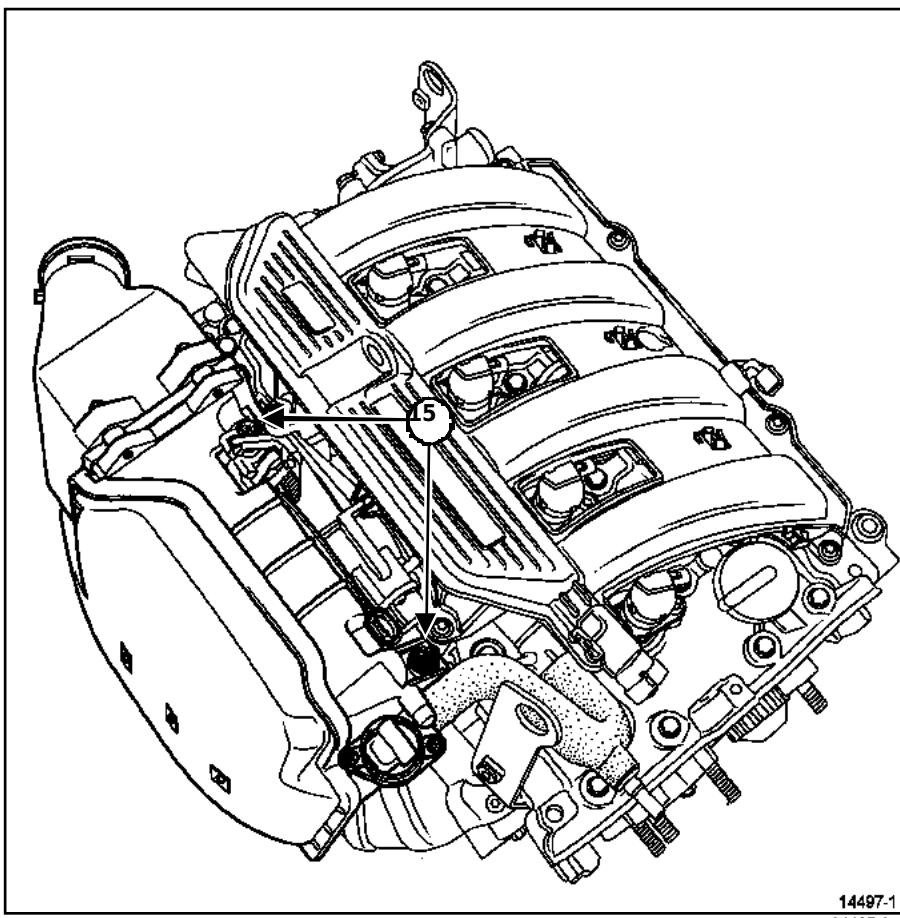
Extract:

-the nut of the exhaust camshaft pulley**13**

-the intake camshaft pulley nut**14**

-the immobilizer of the shaft pulleys-vas (**12**) (Mot.
1490-01),

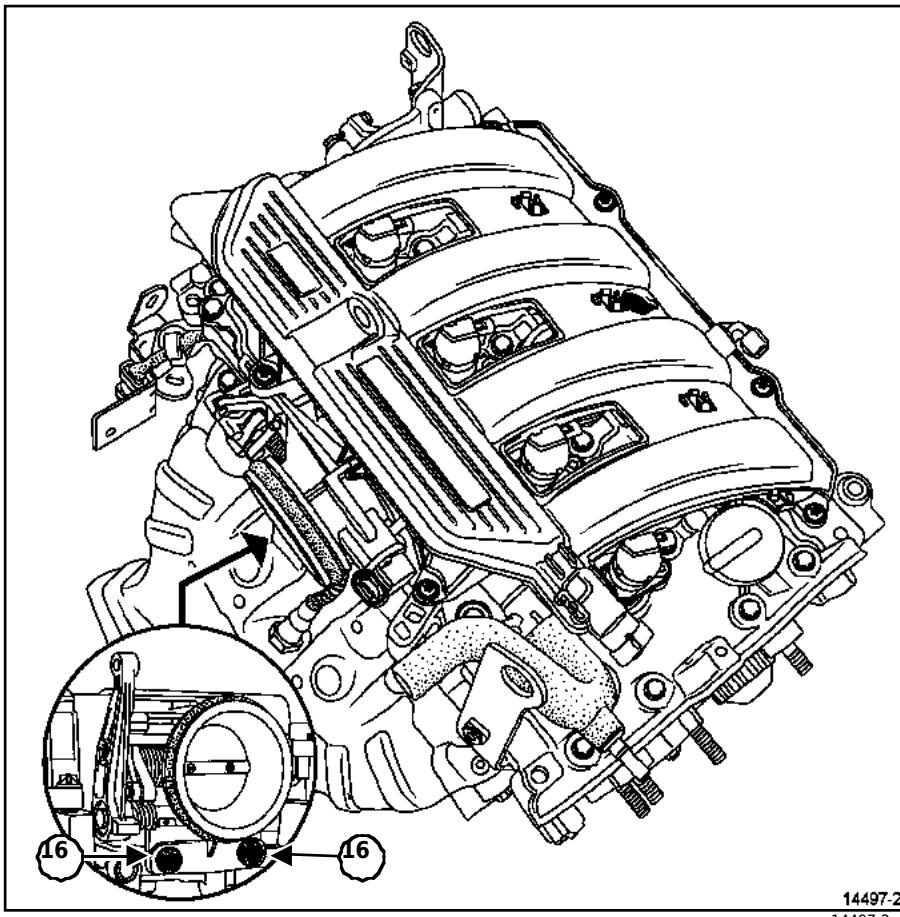
-the camshaft pulleys.



Extract:

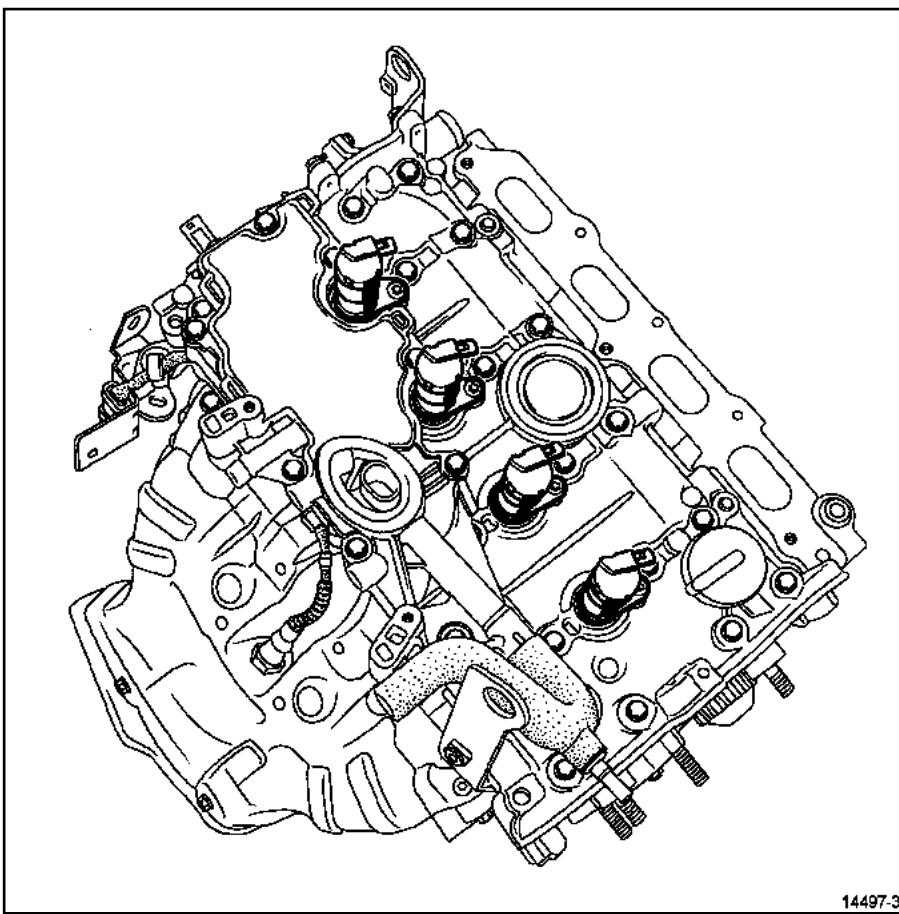
-the fixing screws of the filter housingair, (**15**)

-the air filter housing.



14497-2
14497-2

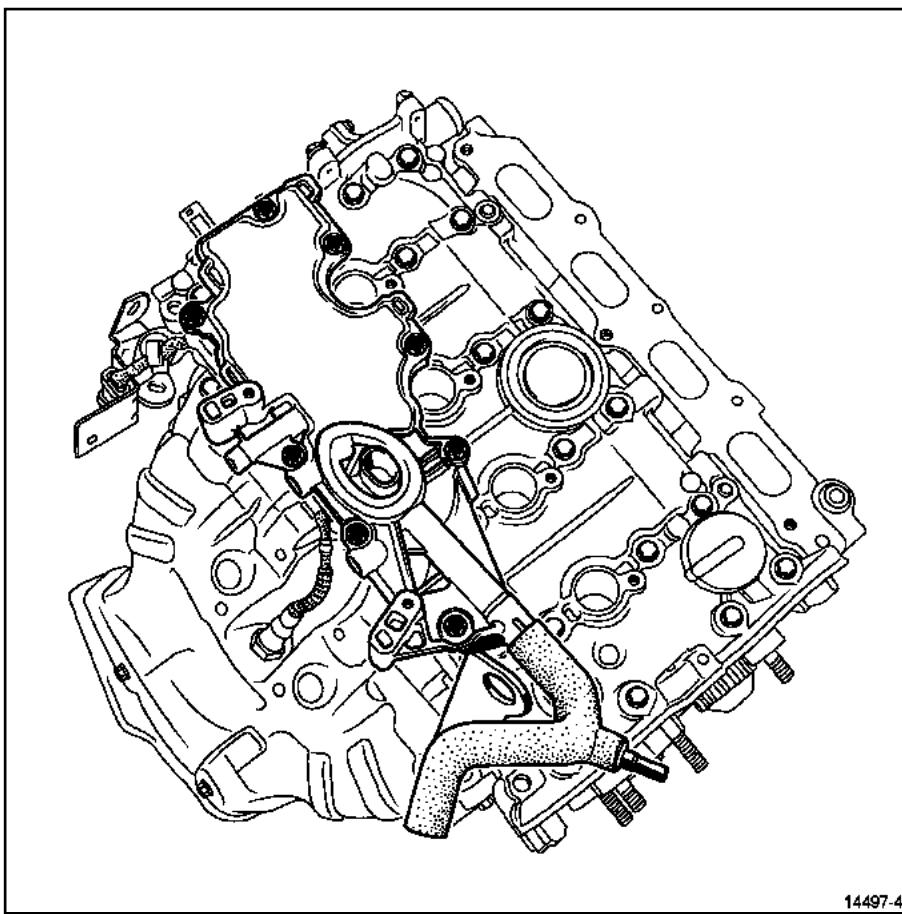
Remove the intake manifold without forgetting to
remove the two screws (**16**) from the butterfly box.



14497-3
14497-3

Remove the ignition coils.

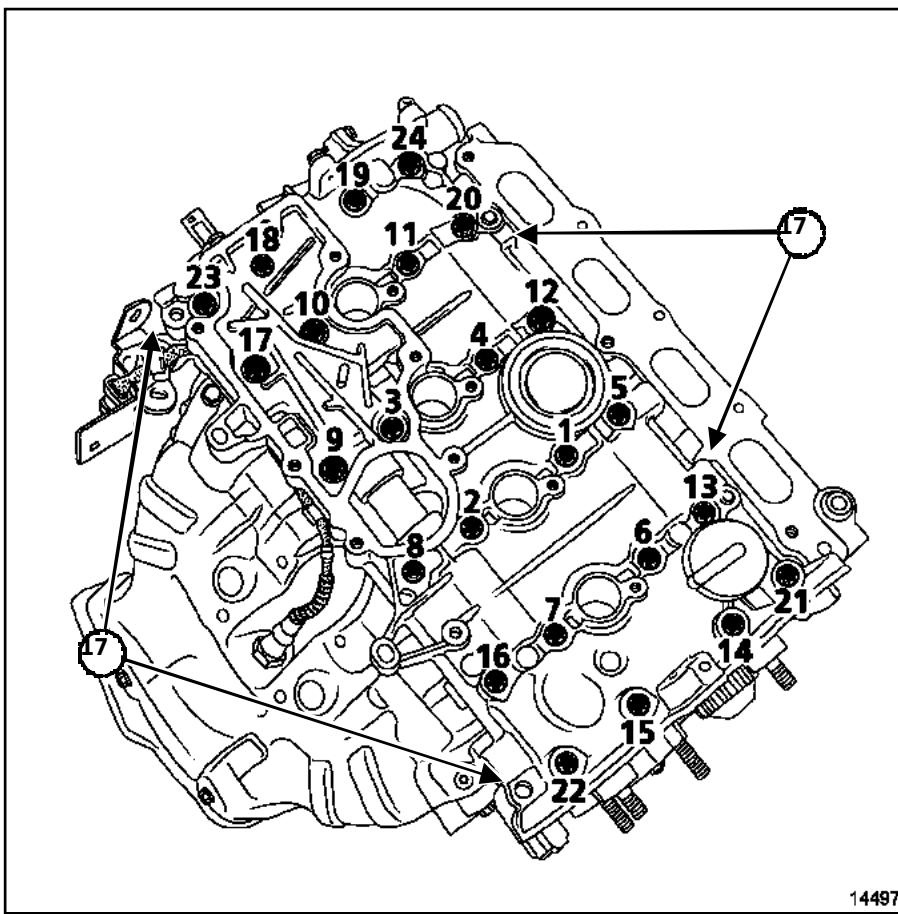




14497-4
14497-4

Remove the oil decanter.

|

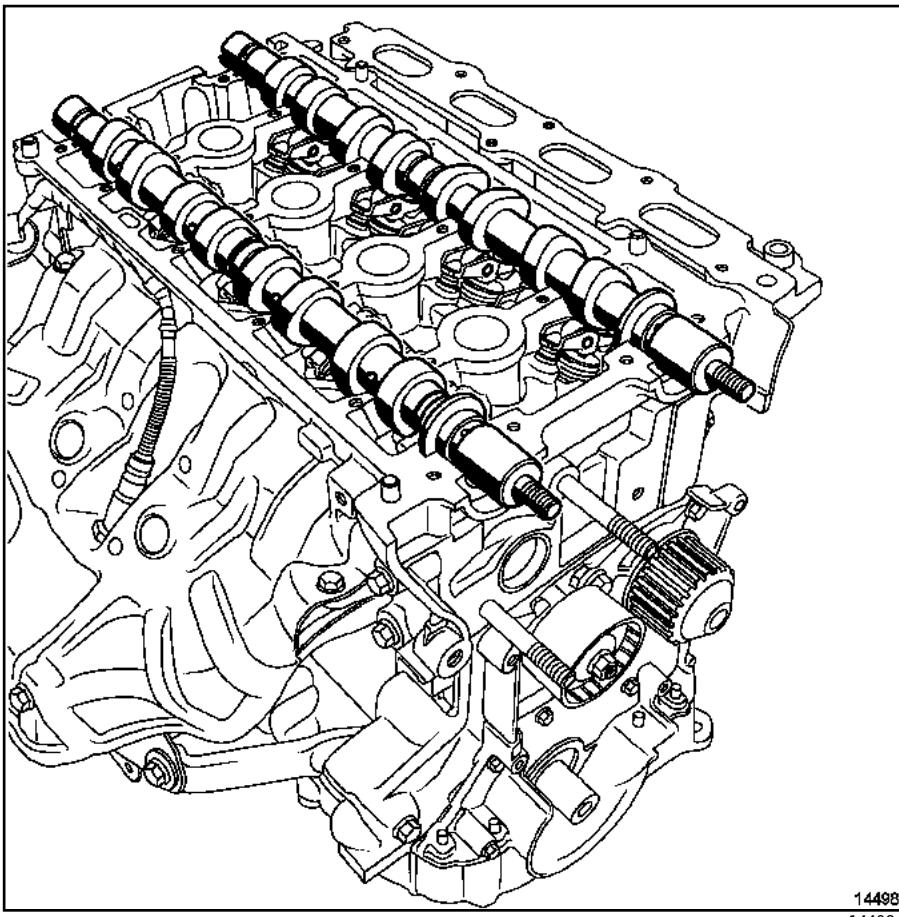


14497

14497

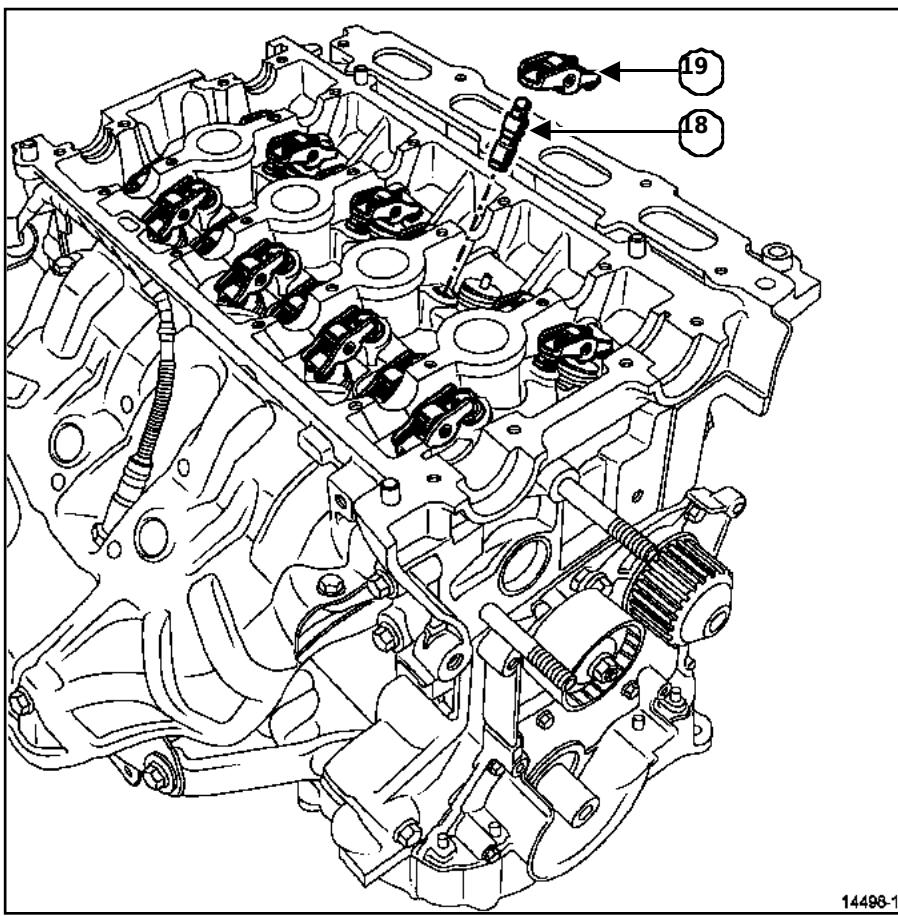
Remove the 24 bolts from the cylinder head cover.

Detach the cylinder head cover vertically by tapping over the lugs (**17**) with a bronze bar.



14498
14498

Remove the intake and exhaust camshafts
on.



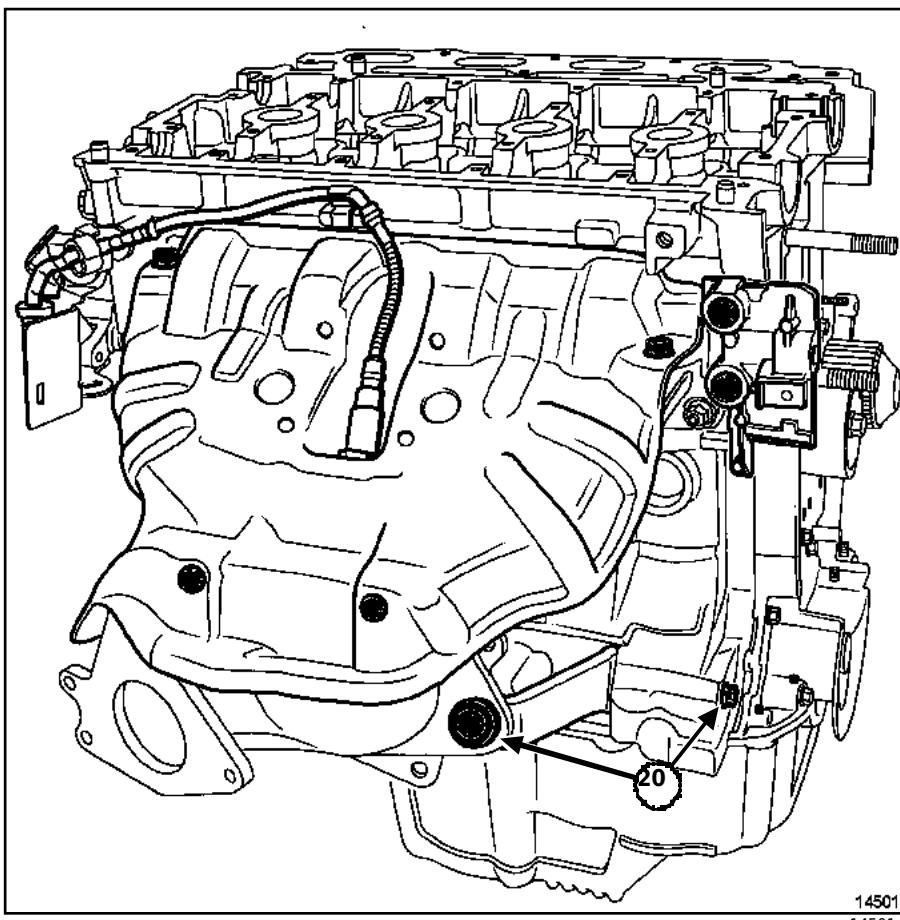
14498-1
14498-1

Extract:

- the rockers (**18**),
- the hydraulic stops (**19**).

NOTE:

It is imperative to fit the hydraulic stops vertically,
to avoid any risk of deburring hydraulic stops.

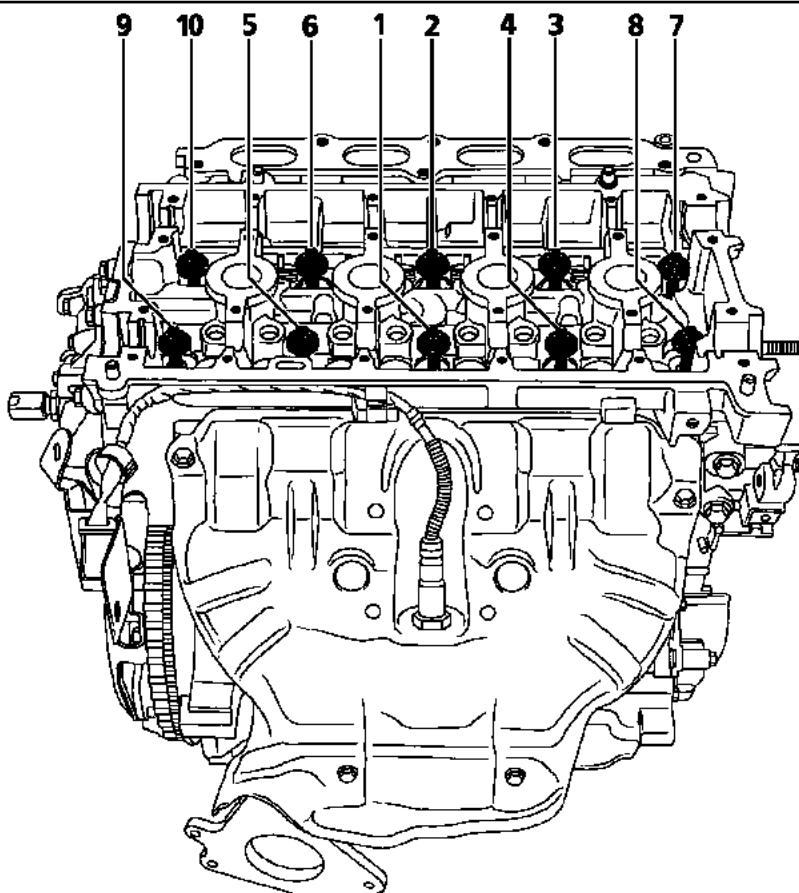


14501
14501

Extract:

-the two fixing screws (**20**) of the ca-talizador,

-the catalyst crutch.



14500

14500

Extract:

-the ten cylinder head bolts,

-the cylinder head.

Place the cylinder head on the cylinder head support (Mot. 1573).

Remove the cylinder head gasket from the cylinder block.

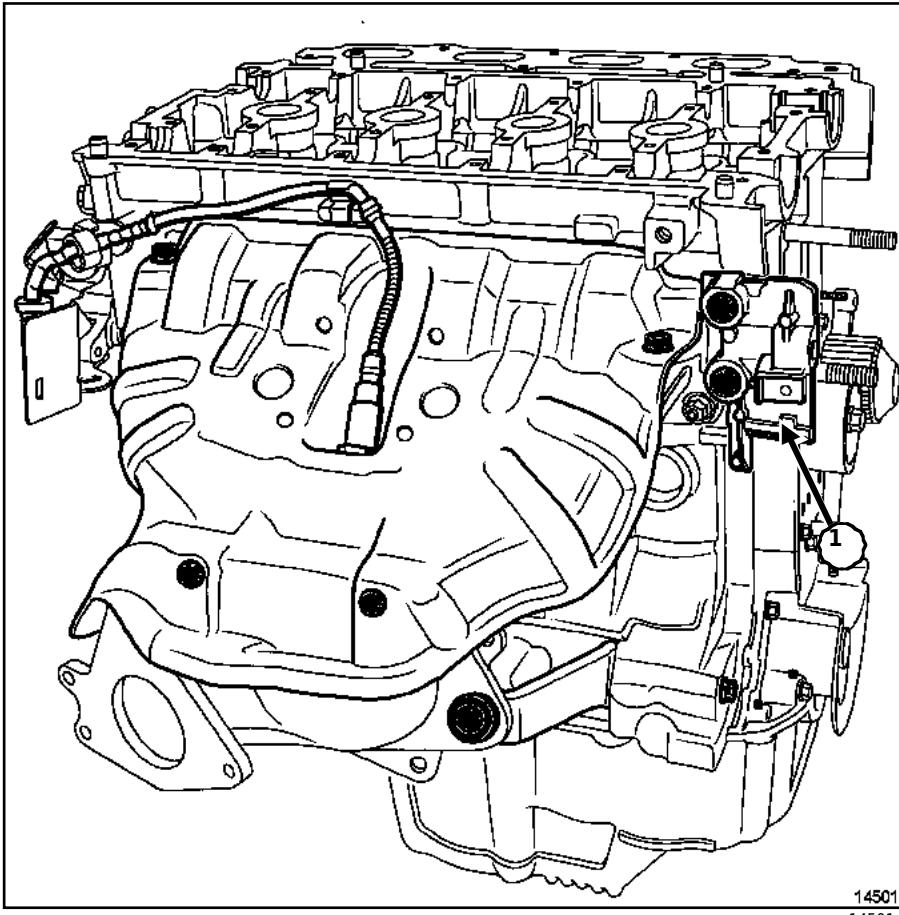
Essential specialized tooling		
Against. 1495	Cap for extraction / replacement tion of the probes oxygen - drag qua- drado 1/2 "and 6 faces ext. de 24 mm	
Against. 1502	Useful for extract the tail pins valves	
Against. 1335	Forceps to remove the tail joints valves	
Against. 588	Cable ties to hold the shirts	
Against. 1511	useful for put the valve tail seals open	

Essential material
tooling to check the cylinder head
case for the installation of the gaskets of the valves

Tightening torques m		
screws of the cylinder head from 1 to 12, from 14 to 19 and 21 - 24	cap of	1.5 daN.m
screws of the cylinder head 13 - 20 -22 -23	cap of	1.5 daN.m
screws from Water exit from the butt	The box of	1 daN.m
manifold nuts escape		2,3 daN.m
screws from the screen thermal exhaust		1 daN.m
oxygen probe		4.5 daN.m
cleat screws portainyector		2.1 daN.m

I - CYLINDER HEAD DRESS

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730
or 732 or 750 - K4M, and 700 or 701 or 704 or 706708
o 709 o 710 o 711 o 712 o 714 o 720 o 724 o 734 o 740
o 742 o 743 o 744 o 745 o 748 o 750 o 752 or 753



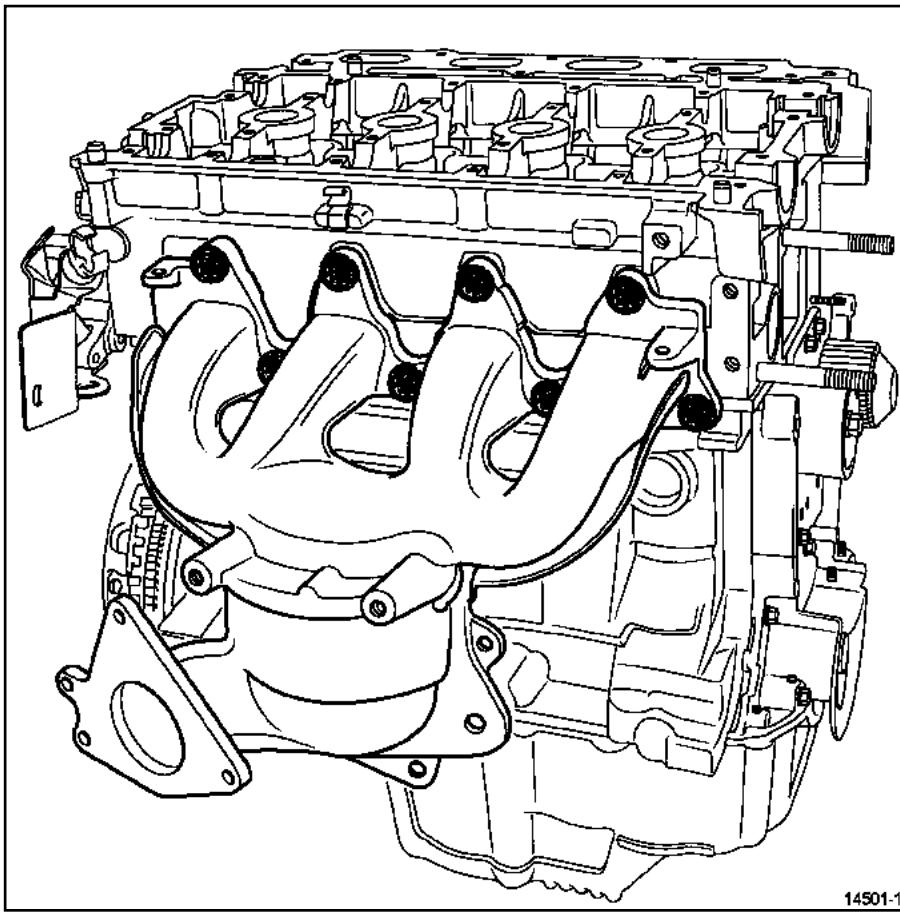
14501
14501

Extract:

- the oxygen probe using the tool (Mot. 1495),
- the heat shields of the exhaust manifold,
- the spacer (1) of the timing cover.

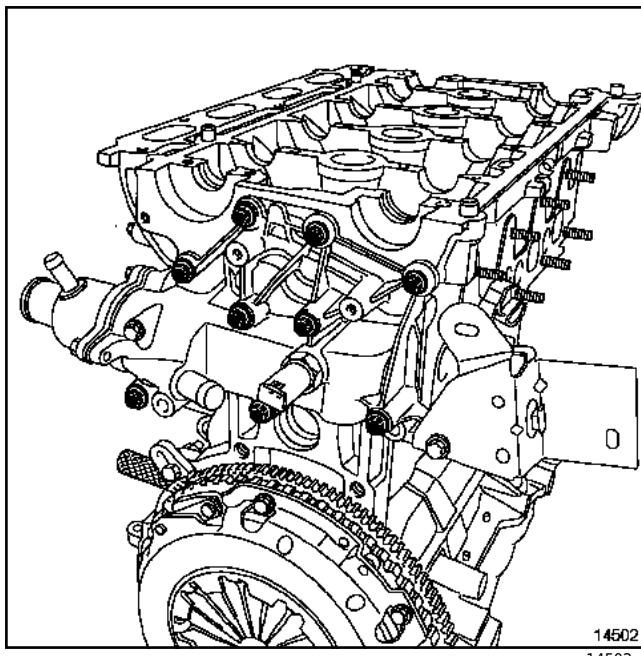
**ENGINE AND LOWER ENGINE
ASSEMBLY**
Stock: Undressed - Dress

10A



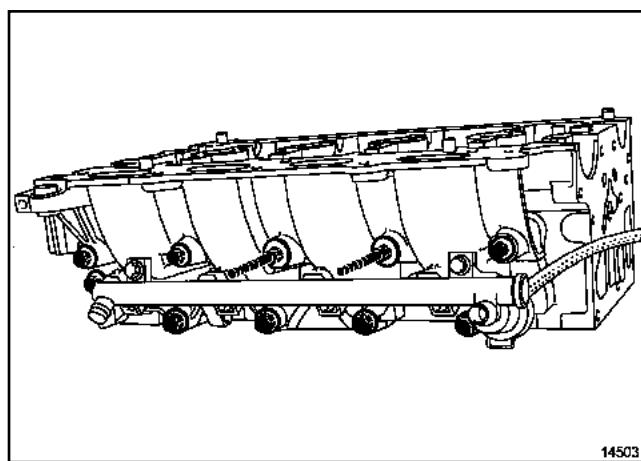
14501-1
14501-1

Remove the exhaust manifold.



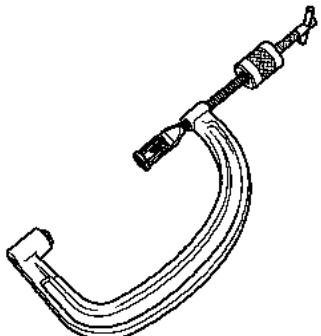
14502
14502

Remove the cylinder head outlet water box.



14503
14503

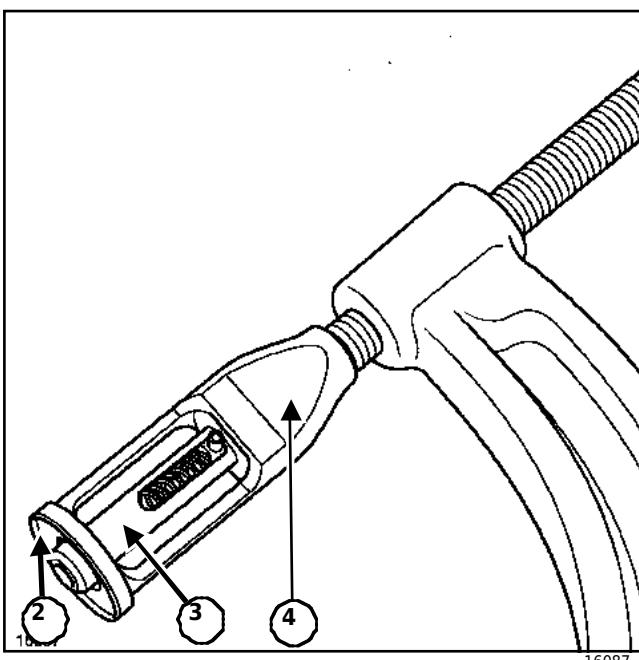
Remove the cleat from the injector holder.



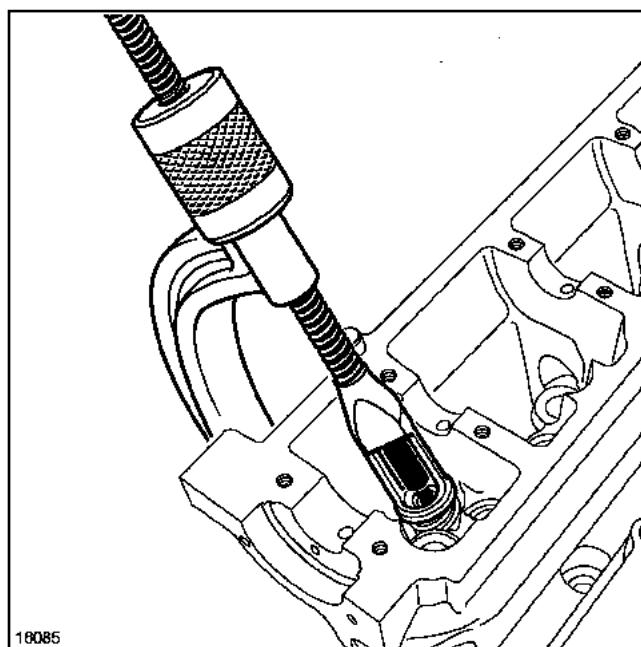
16088

16088

The compression of the valve springs is carried out through (Mot. 1502).



16087



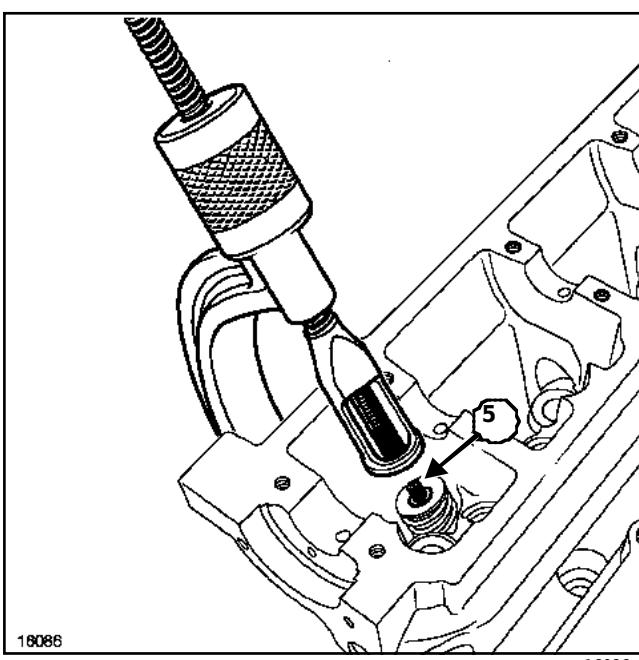
16085

To properly compress the springs of the valves, it is imperative that the piston (3) of (Mot.1502) is centered on the valve tail (5).

The upper cup of the valve spring must enter in the seat (2) of the bushing (4) of (Mot.1502).

Extract:

- the keys,
- the upper cups of the valve springs,
- valve springs,
- the valves,
- the seals of the valve guides with the help of the pliers (Mot. 1335).



16086

1 - Cleaning the cylinder head

IMPORTANT

Do not scratch the joint surfaces of the surfaces of aluminum.

Putting on glasses.

Put on gloves during the operation.

Clean the planes together with the product **DECAPJOINT** to dissolve the joint part that has been stuck.

Apply the product to the part to be cleaned tweet; wait about ten minutes and then withdraw the residue with a wooden spatula.

ATTENTION

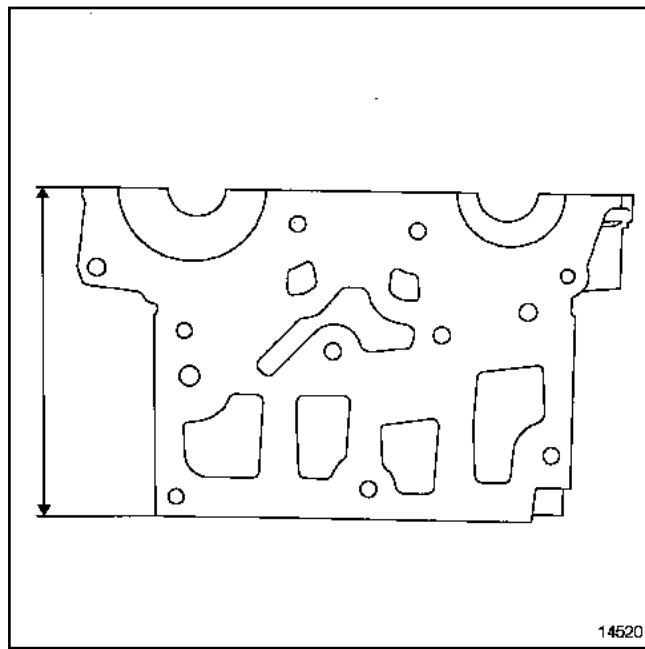
Do not drop product on the paintings.

Clean carefully to avoid entry can foreign bodies in the pipes or brought oil under pressure to the stop hydraulic, camshafts, (pipes located both on the engine block and on the cylinder head) and the oil return pipe.

Failure to respect this instruction can lead to clogging of the different intake ducts of oil and to provoke a deterioration fast of motor.

2 - Cylinder head control

a - Cylinder head height control



The height of the stock is **137 mm**.

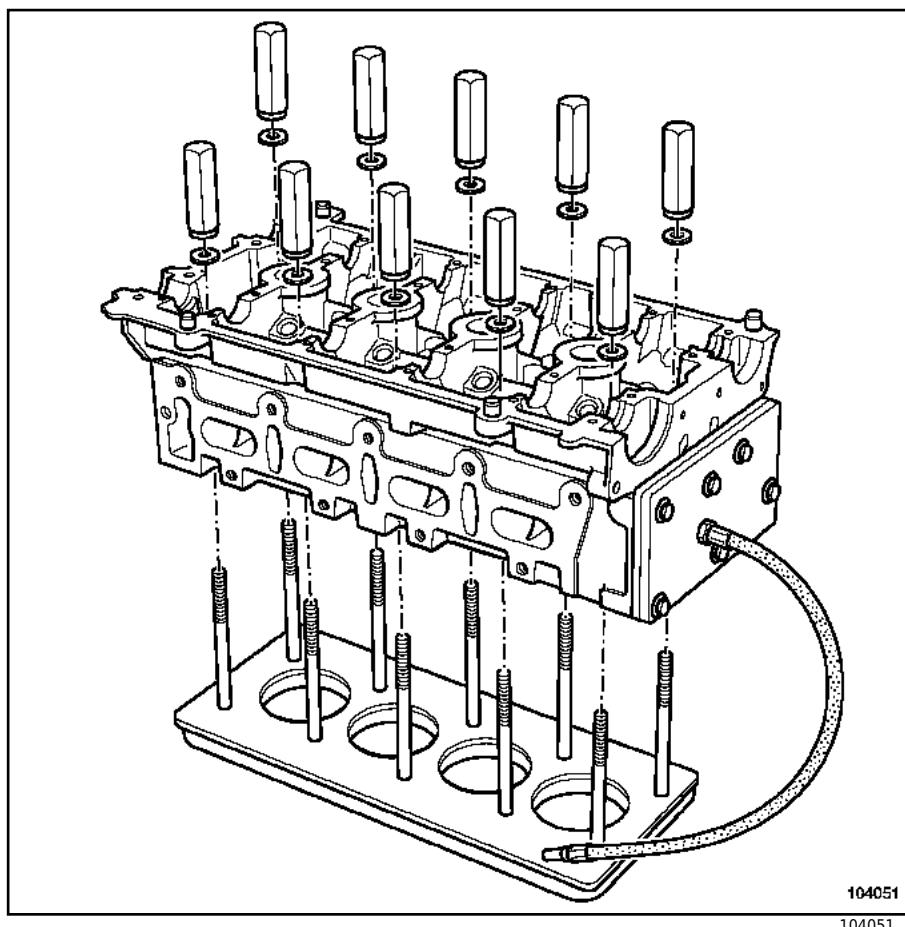
b - Checking the cylinder head gasket plane

Verify, with a rule for the cylinder head and a set of las, the deformation of the joint plane that must not **0,05 mm**

ATTENTION

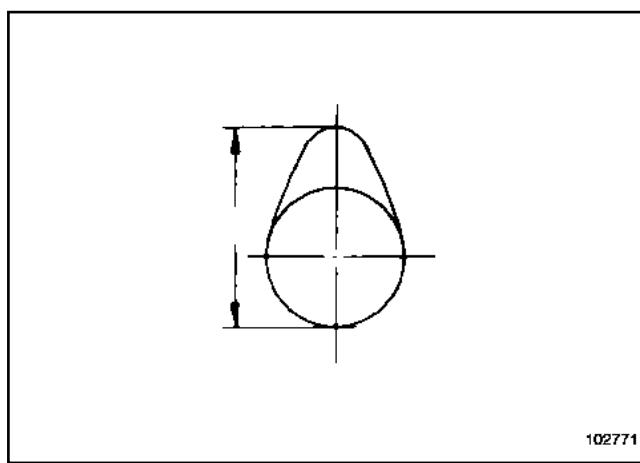
No grinding of the cylinder head is authorized.

c - Checking the cylinder head tightness



Test the cylinder head for a possible crack
using the **tooling to check the cylinder head**.

d - Cam height control

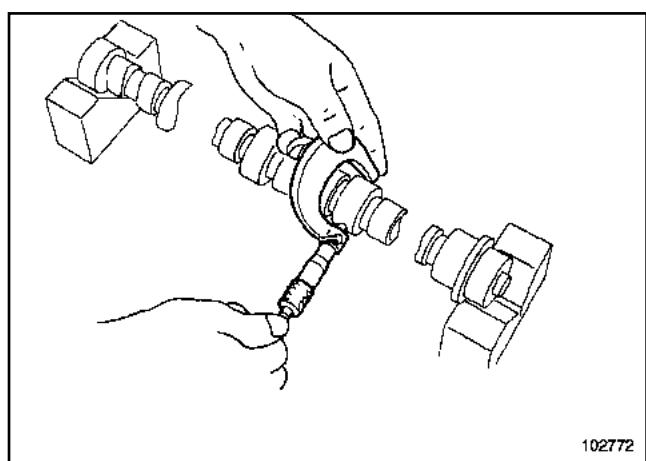


Measure the height of the cams:

-Admission **40,661 ± 0,04 mm**,

40,038 0,03 mm

e - Control of the diameters of the supports of the
Camshafts

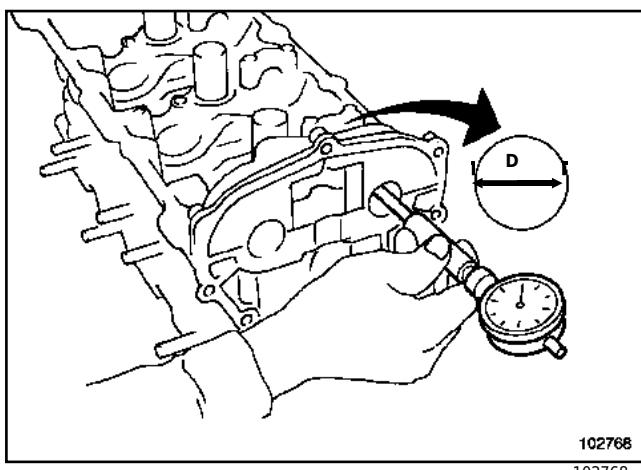


Measure the diameter of each bearing of the
shaftlevas.

Diameter of the camshaft bearings:

24,979 a 25 mm

27,979 a 28 mm



102768

Measure the inside diameter of each tree supportcylinder head cams.

Inner diameter of the tree supportsyou:

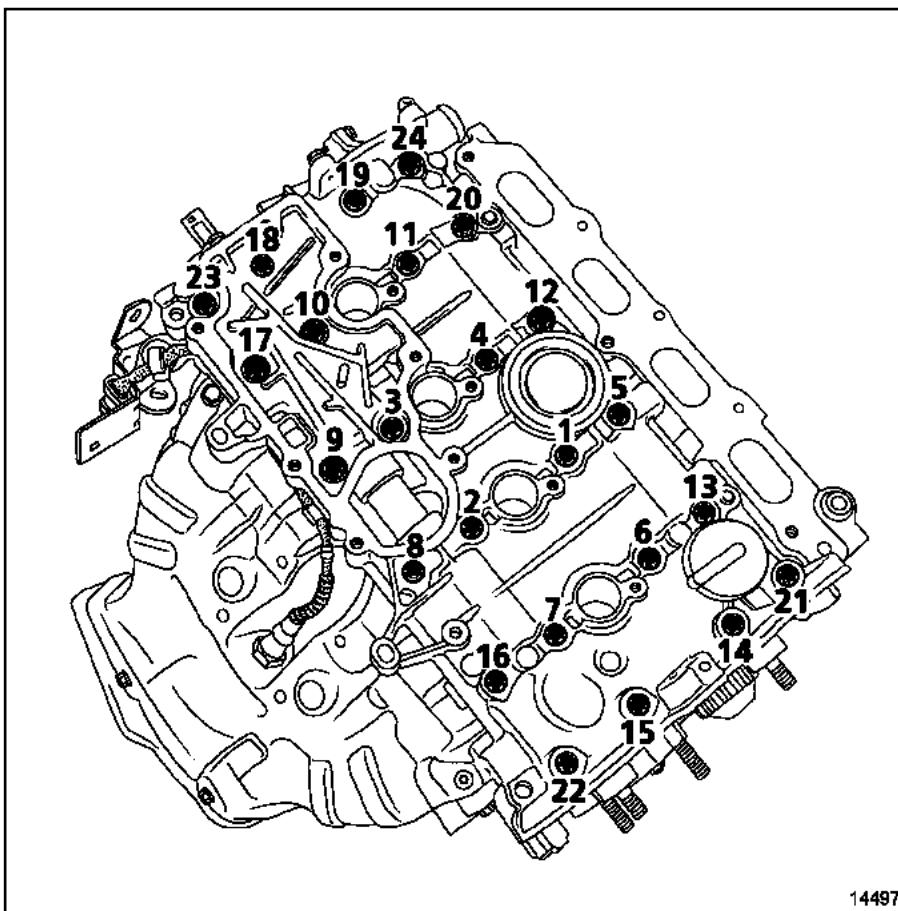
25,04 a 25,061 mm

28,04 a 28,061 mm

**f - Control of the longitudinal play of the axle
shaftslevas**

Put:

- the camshafts, positioning them correctly-
- at (Chapter Engine and engine underbody assembly, Part-motor top tee: Features, page **10A-5**),
- the cylinder head cover.



Fit the cylinder head cover.

Tighten in order and pairs:

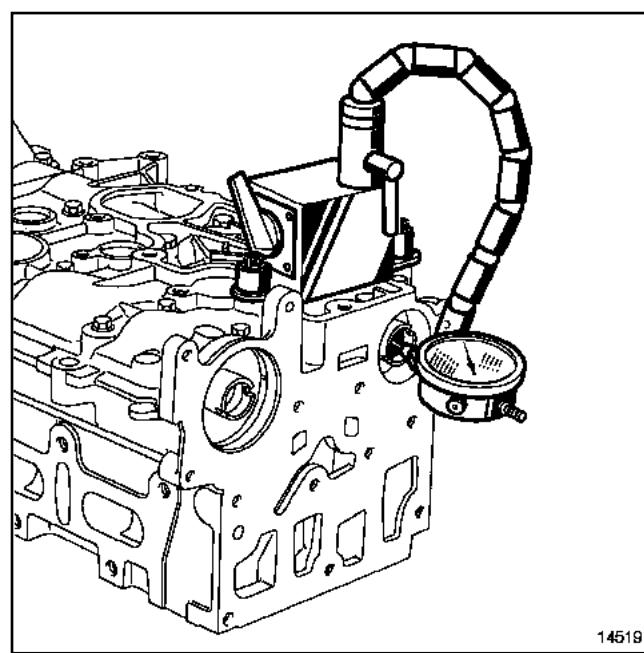
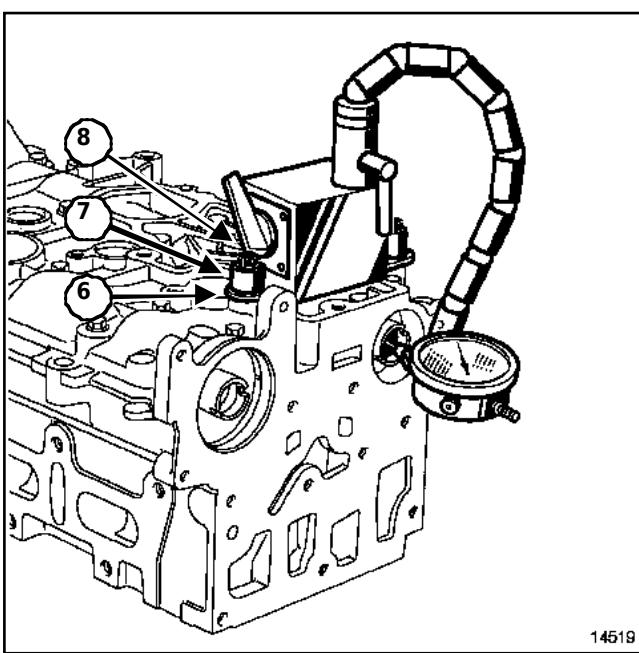
-the bolts of the cylinder head cover 13 - 20 - 22 - 23

a **0.8 daN.m** ,

-the **bolts of the cylinder head cover from 1 to 12, from 14 to 19 and 21 - 24** (**1.5 daN.m**) .

Loosen the cylinder head cover bolts 13 - 20 - 22-23.

Tighten the cover screws in order and to torque cylinder head 13 - 20 -22 -23 (1.5 daN.m) .



NOTE:

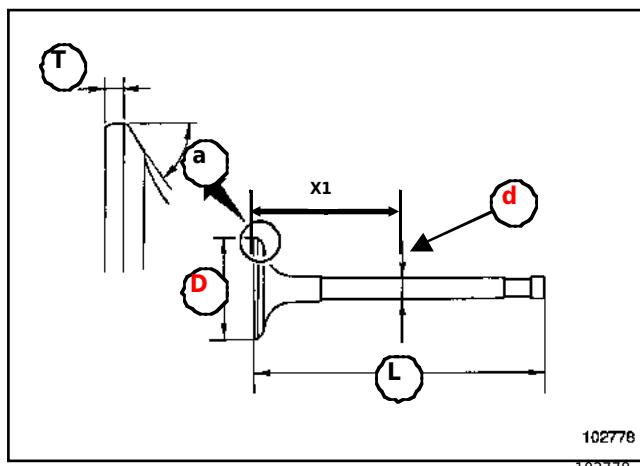
Fix the magnetic foot on the cylinder head. Must use a flange (**6**) from (Mot. 588) and fix it with help of the decantation fixing screws (**8**)
oil cooler and separators (**7**) whose dimensions are as follows:
-18mm outer **diameter** ,
-diameter of the screw (**8**) through hole of **9 mm**
- height of **15 mm** .

Check the longitudinal play that must be complete set between **0.08 and 0.178 mm** .

Extract:

- the cylinder head cover,
- camshafts.

g - Valve control



Valve stem diameter (**D**) is measured in (**X1**)

-Admission (**X1**) = **75.14 ± 0.4 mm** **0.35 mm** , (**D**) = **5.470 to 5,485 mm**

X177,5 0,35 mm D5,456 a 5,471 mm

Valve head diameter (**D**)

-Admission **32.7 ± 12.12 mm**

27,96 0,12 mm

Valve length (**L**)

-Admission **109.32 mm**

107,64 mm

Seat angle (**A**)

-Intake and exhaust **45° 45' to 45°**

Head thickness (**T**)

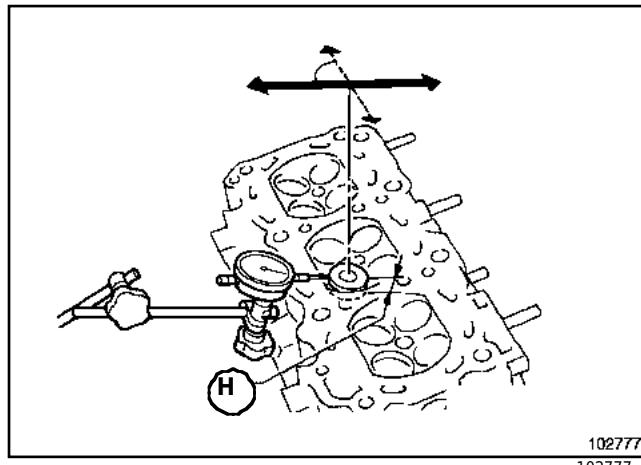
-Admission **1.15 mm**

1,27 mm

Valve lift

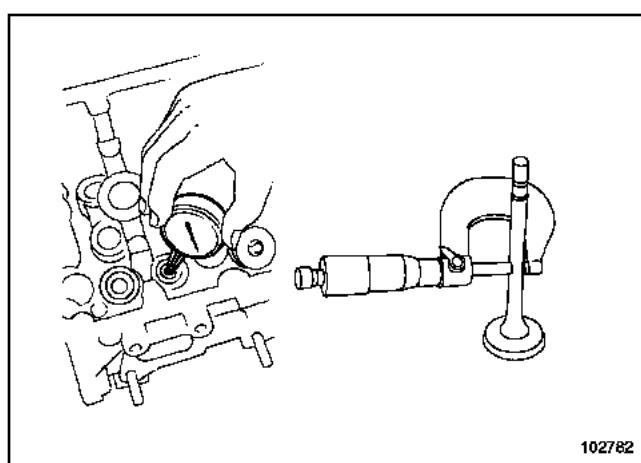
-Admission **9.221 mm**

8,075 mm



First form:

-Make the valve head protrude a height of **25 mm** , and then with the help of a dial gauge , carry out the measurement in the direction of the arrows applying an angle of **90°** with respect to the axis of the shaft cam. Half of the value obtained corresponds to the clearance between the valve and the guide.



Second way:

-Measure the diameter of the valve tail and the diameter inside the valve guide.

Clearance between valve and guide

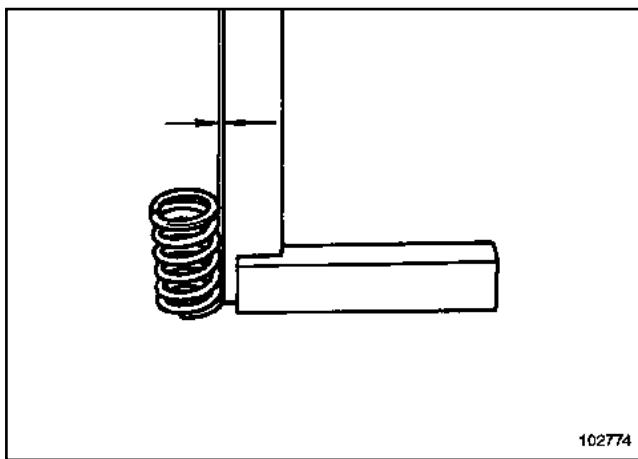
Normal game:

-Admission: **0.015 to 0.048 mm** ,
0,029 a 0,062 mm

h - Checking the clearance between the valve and the guide

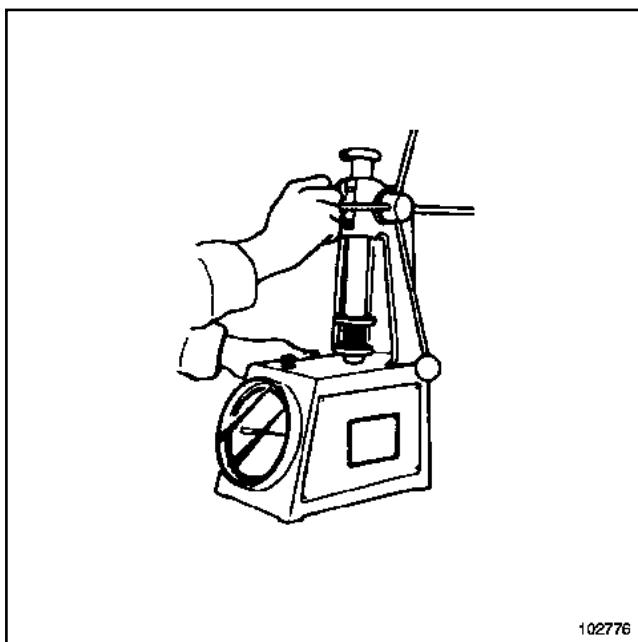
Checking the clearance between the valve and the guide can be done in two ways.

i - Checking the valve springs



102774
102774

Check the perpendicularity of the spring, it should not
be superior to **1,2 mm**



102776
102776

Check the spring setting:

Length under load of:

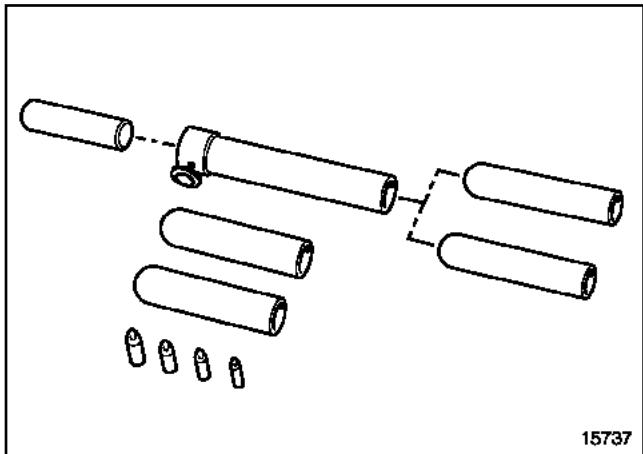
-Under a load of **18 to 20 daN** the length of the spring-
the es of **34.50 mm**,

-Under a load of **56.3 to 61.7 daN** the length of the
spring is **24.50 mm**.

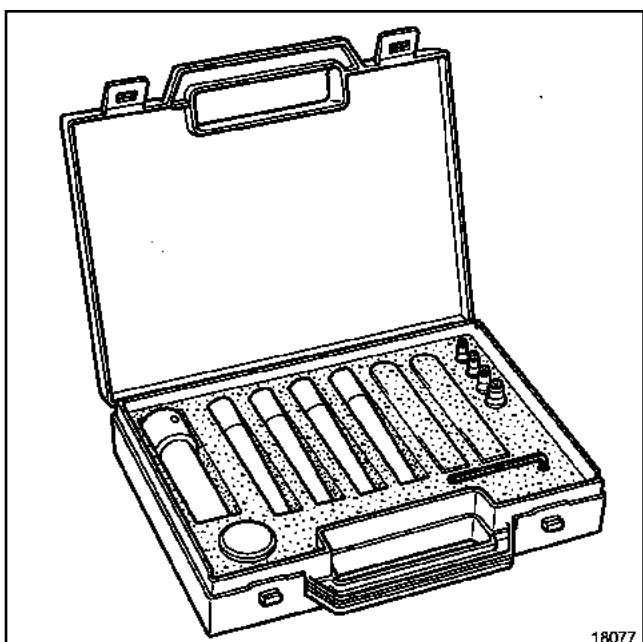
Free length: **41.30 mm**.

II - HEAD DRESS

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730
o 732 or 750 - K4M, and 700 or 701 or 704 or 706708
o 709 o 710 o 711 o 712 o 714 o 720 o 724 o 734 o 740
o 742 o 743 o 744 o 745 o 748 o 750 o 752 or 753



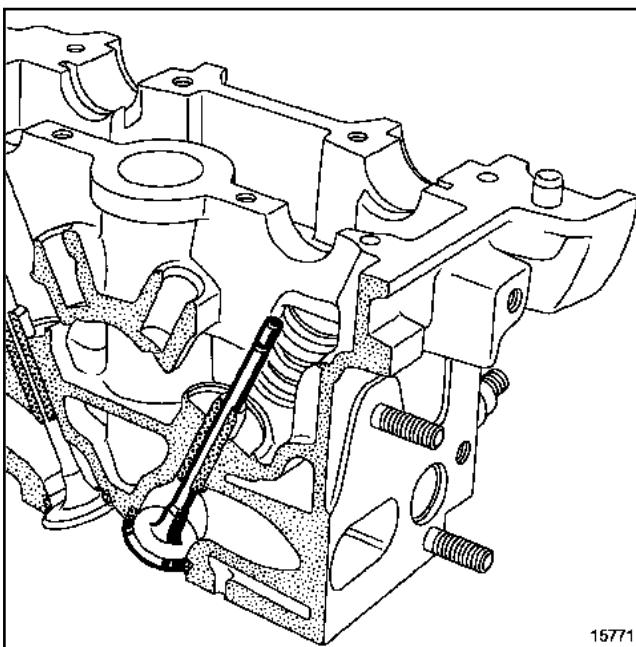
15737
15737



18077
18077

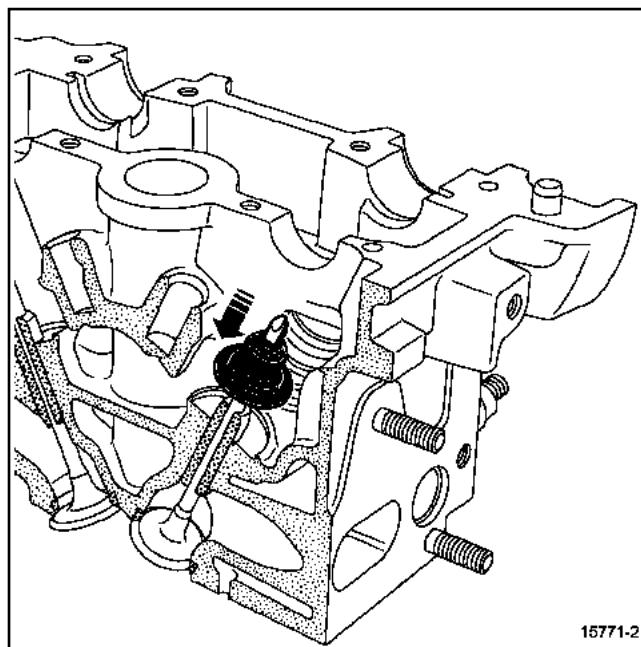
It is imperative to fit the valve stem sealsvalves with the tool (Mot. 1511) or with the aid of the material

**case for fitting the glue joints
valve**



15771

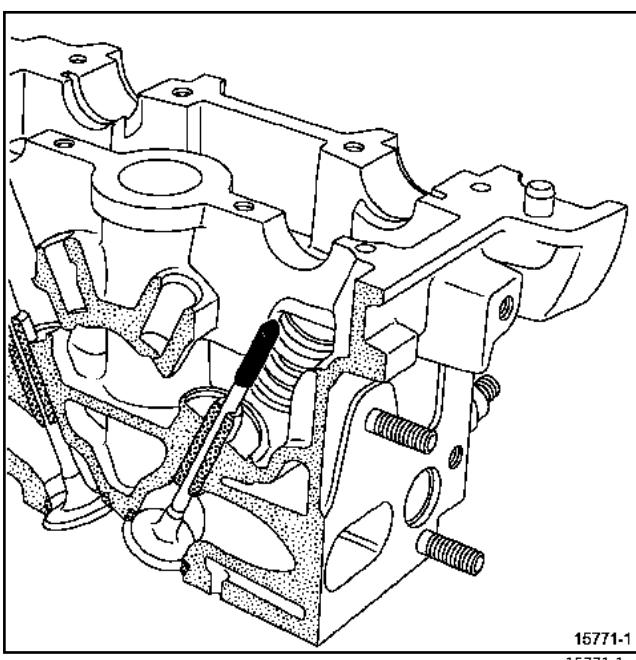
Place the valve on the cylinder head.



15771-2

Fit the valve stem gasket (not oiled)
on the howitzer.

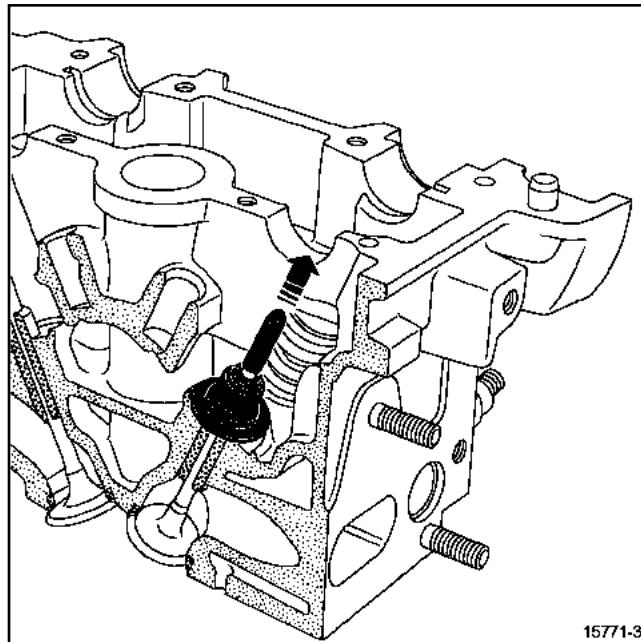
Push on the valve tail seal until it gets past the
howitzer.



15771-1

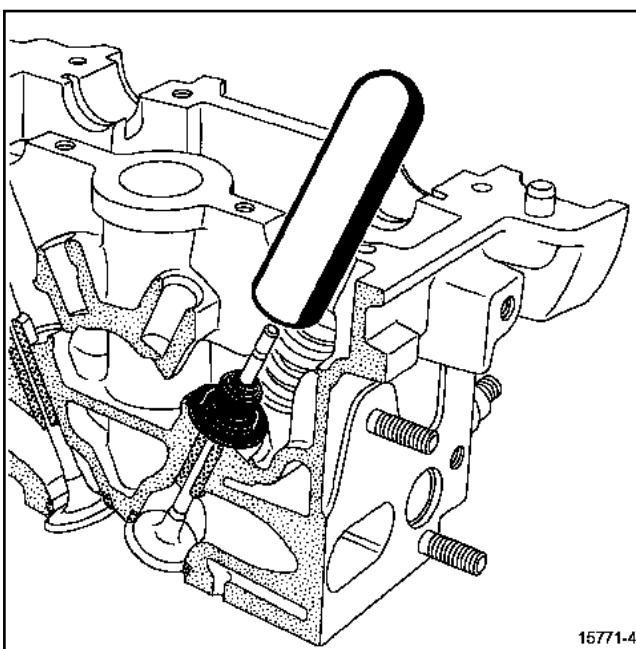
Place the core of (Mot. 1511) on the tail of the valve (the inside
diameter of the howitzer must be the same as
that of the valve tail).

Keep the valve resting on its seat.



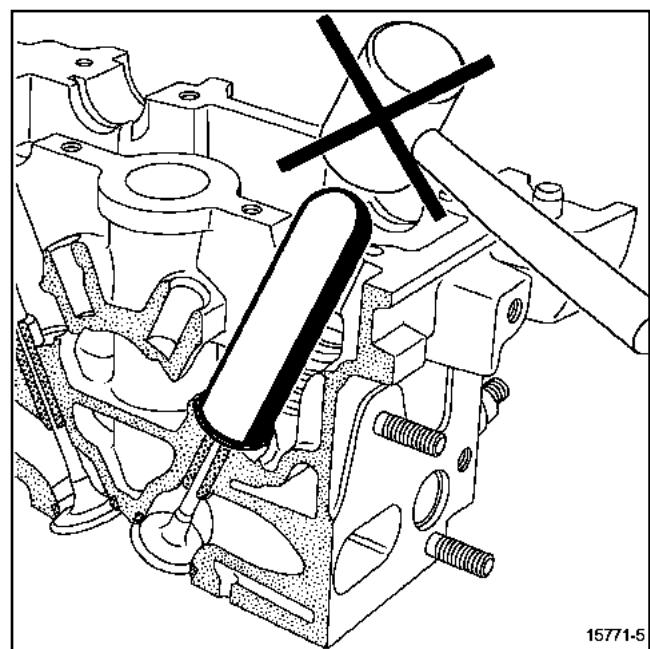
15771-3

Remove the shell.



15771-4
15771-4

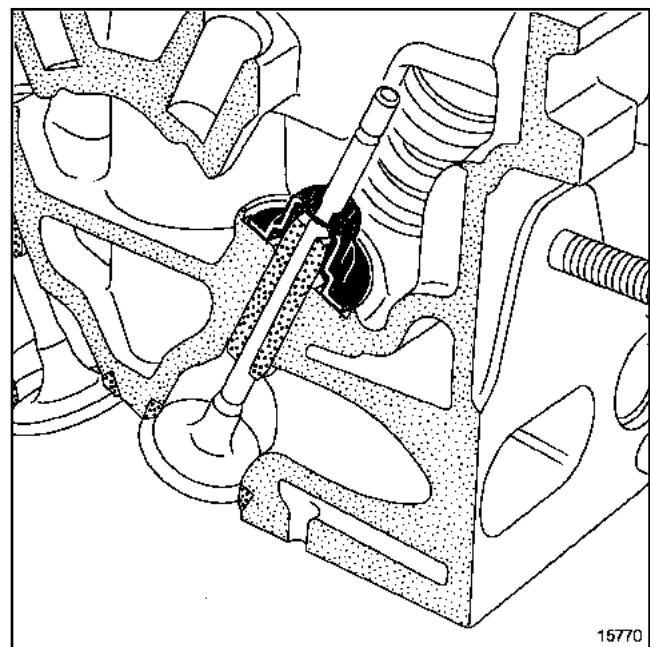
Put the push rod in the tail seal of the valve.



15771-5
15771-5

NOTE:

the inside diameter of the push rod must be the same as the valve tail. Also, the bottom of the pushrod must rest on the gasket part of the valve tail that serves as a backup washer bottom for the valve spring.



15770
15770

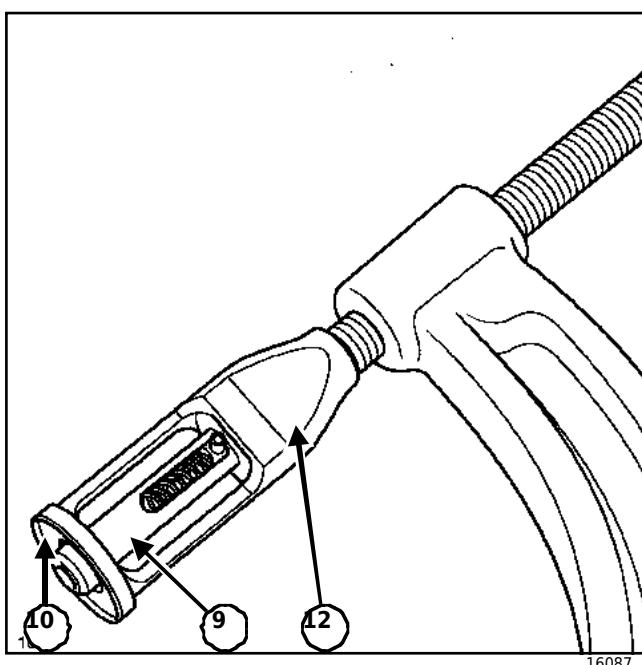
Insert the valve tail gasket by tapping with the palm of the hand on top of the push rod, up to the contact of the gasket

valve tail with cylinder head.

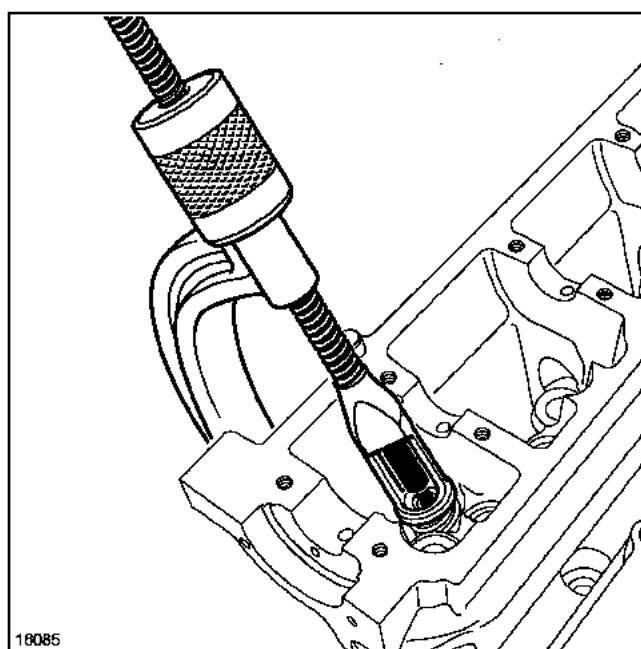
Repeat the above operations in all the valves. the wombs.

Put:

- the quays,
- the upper cups.



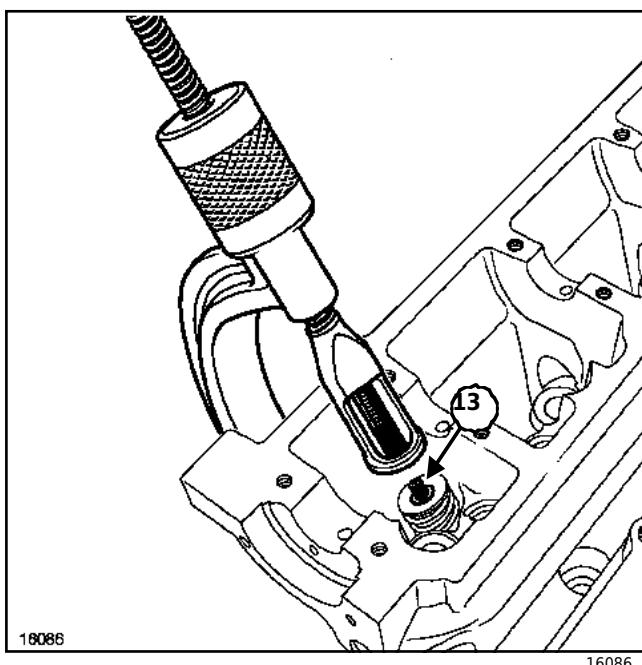
16087



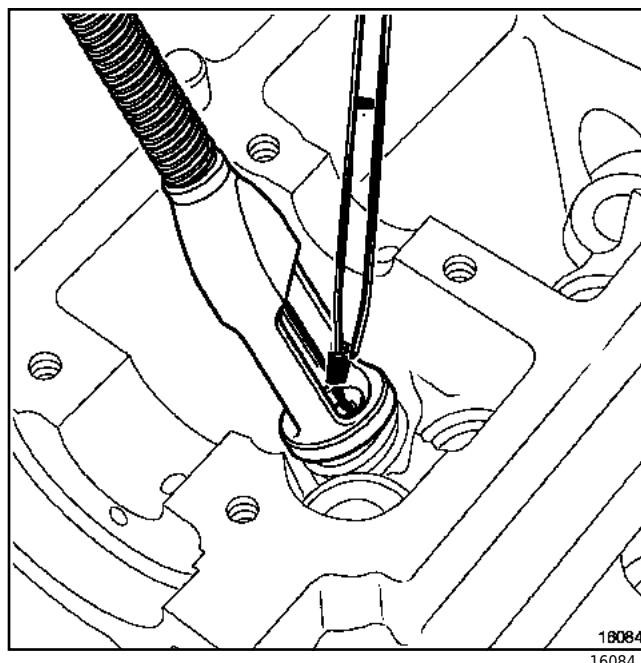
16085

To properly compress the springs of the valves, it is imperative that the piston (9) of (Mot. 1502) is centered on the tail of the valve (13).

The upper cup of the valve spring must enter in the housing (10) of the bushing (12) of (Mot.1502).

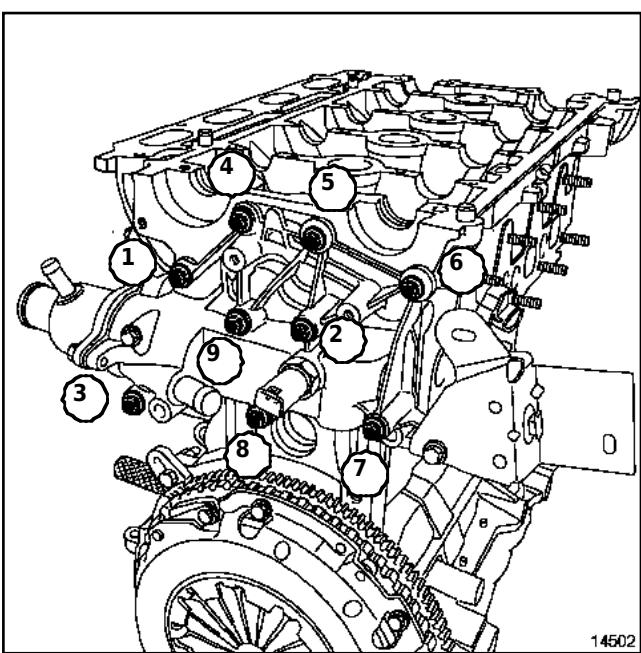


16086



16084

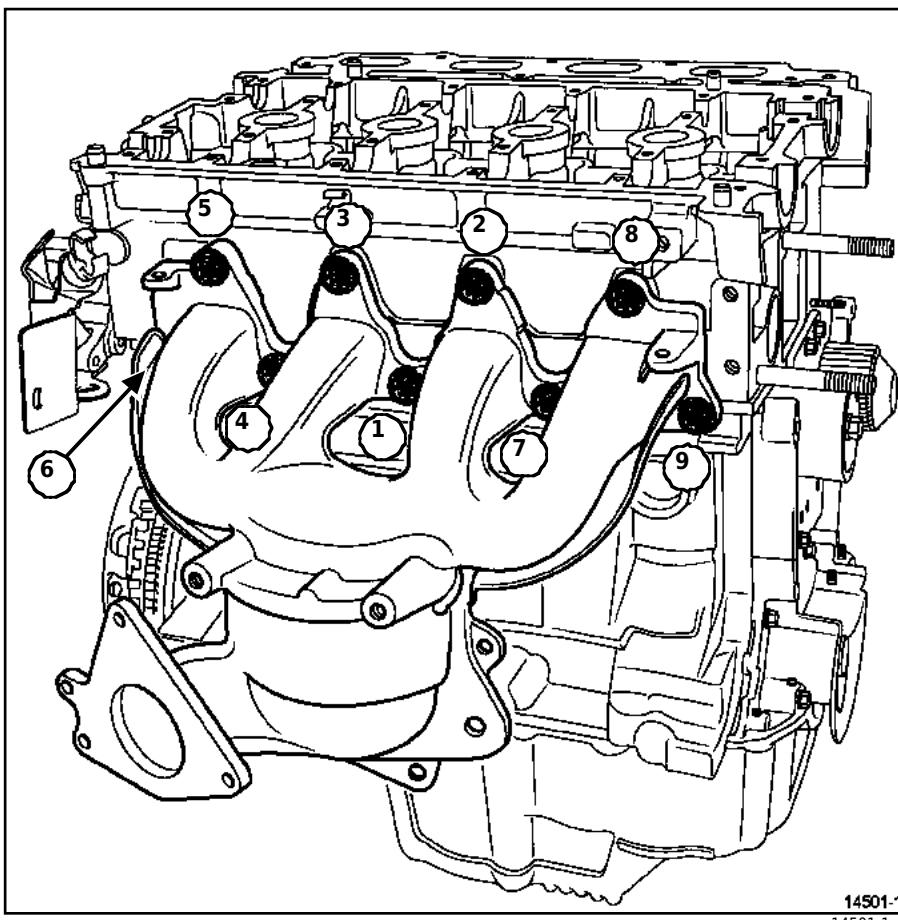
Position the keys with the help of a fine pliers (ti-po brussels).



14502Fit the outlet water box of the cylinder

head equi-pad with a new gasket.

**Tighten the box screws in order and to torque
cylinder head outlet water (1 daN.m) .**

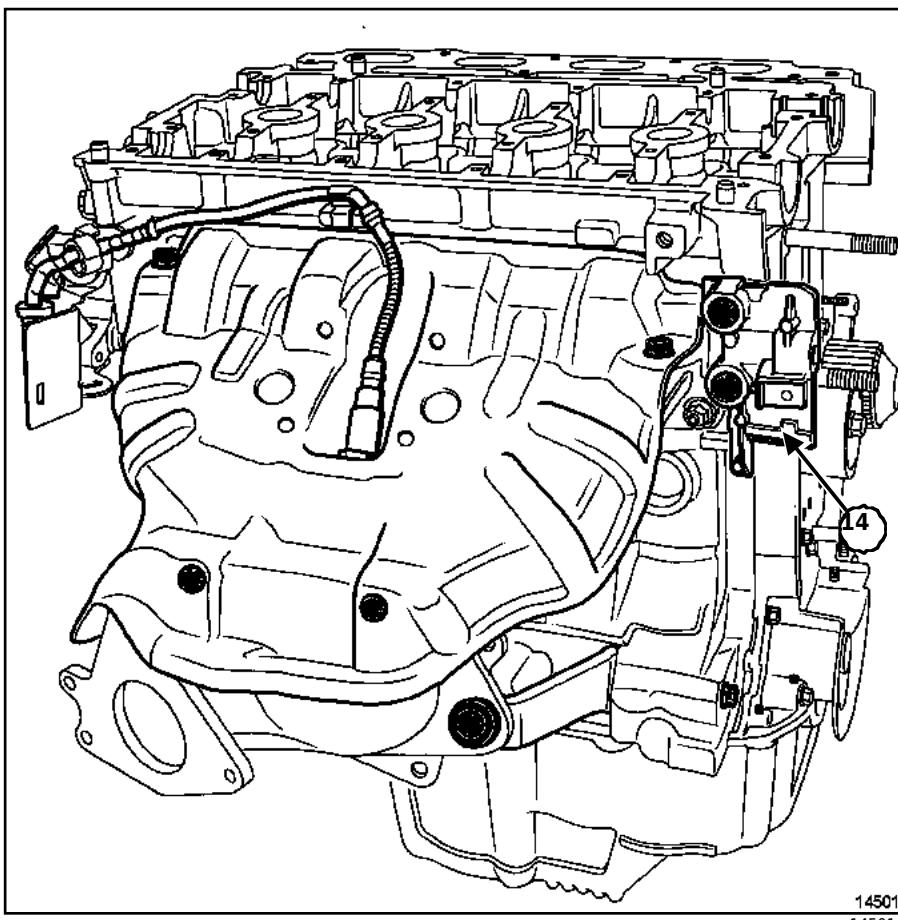


14501-1

14501-1

Fit the exhaust manifold equipped with a gasket
a new one.

**Tighten the manifold nuts in order and to torque
exhaust (2,3 daN.m) .**



14501
14501

Fit the exhaust heat shield.

**Tighten the screws of the heat shield to torque
exhaust (1 daN.m).**

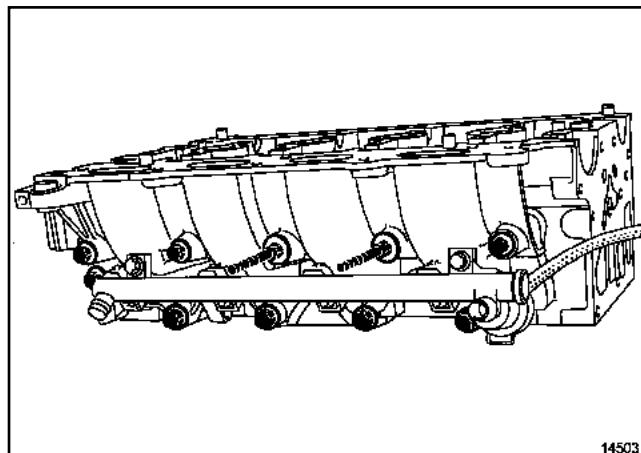
Fit the oxygen probe.

ATTENTION

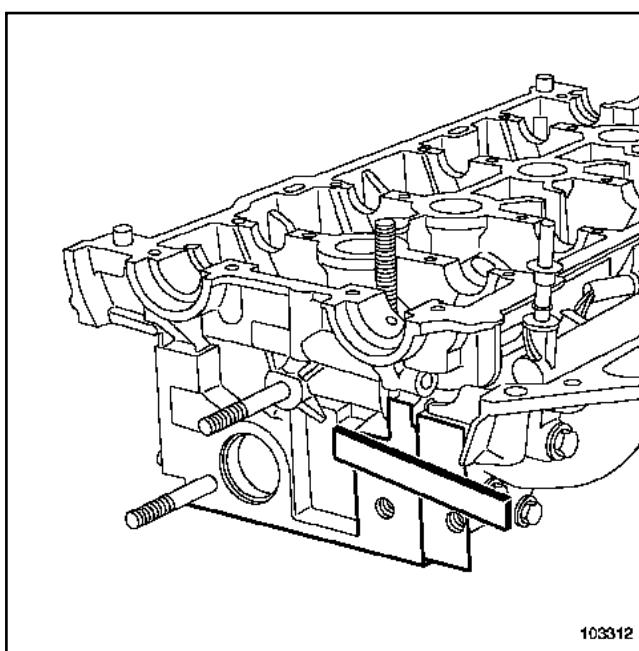
Check that the exhaust heat shield is correctly clamped between the oxygen probe and the collector (this avoids a chimney effect that could destroy the probe connection to oxygen).

Torque the **oxygen probe** (4.5 daN.m)
using the tool (Mot. 1495).

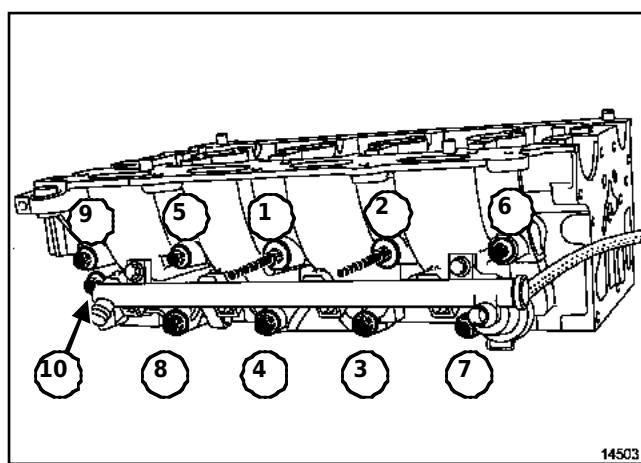
Fit the spacer (**14**) of the timing cover.



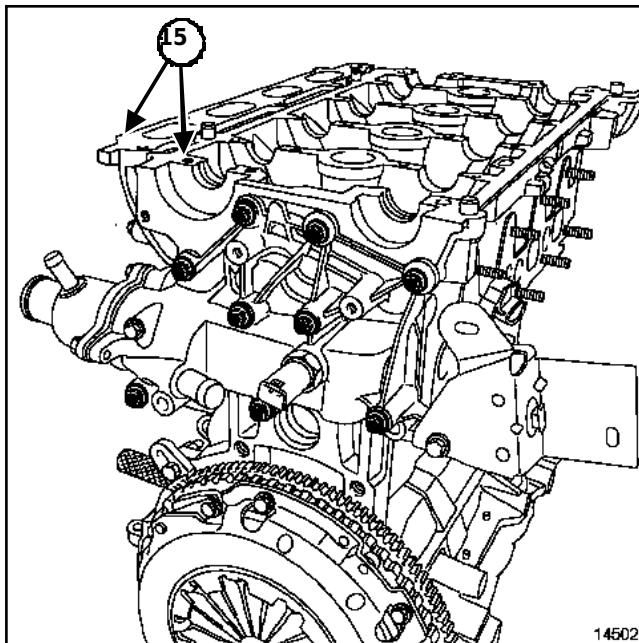
Fit the injector holder cleat equipped with a new gasket.



103312 Align the injector holder cleat with the cylinder head(distribution side).



Tighten the cleat bolts in order and to torque
of the injector holder (2.1 daN.m) .



14502 Align the joint planes (15) of the por-the
injector relative to the cylinder head.

ENGINE AND LOWER ENGINE ASSEMBLY

Stock: Undressed - Dress

10A

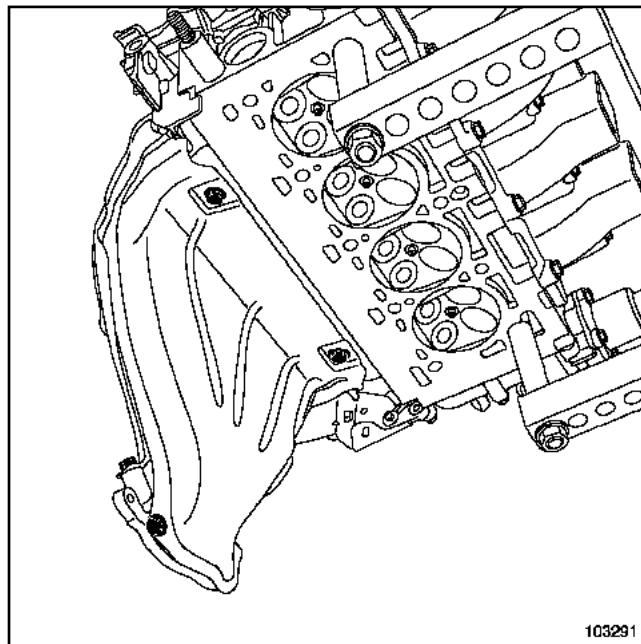
K4M

Essential specialized tooling		
Against. 1495	Cap for extraction / replacement of the probes oxygen - drag qu- adro 1/2 "and 6 faces ext. de 24 mm	22 mm
Against. 1502	Useful for extract the tail pinsvalves	
Against. 1335	Forceps to remove the tail joints valves	
Against. 588	Cable ties to hold the shirts	
Against. 1669	Mounting the pusher backlash	
Against. 1511	useful for put the valve tail seals open	
Essential material		
tooling to check the cylinder head		
case for the installation of the gaskets of the valves		

Tightening torques m		
screws from the screen thermal inferior escape	from	1 daN.m
cleat screws portainyector		2.1 daN.m
cleat screws 1 and 2 of the injector holder		2.5 daN.m

I - CYLINDER HEAD DRESS

K4M, and 760 or 761



103291

103291

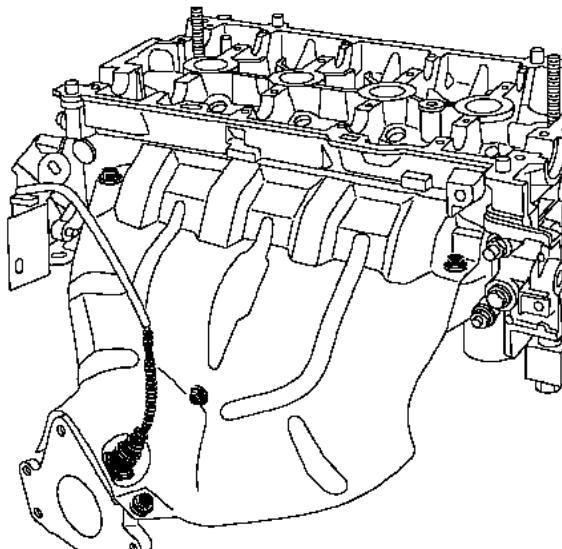
Remove the lower heat shield from the exhaust
manifold. cape.

Tightening torques m		
screws of the cap of cylinder head from 1 to 12, from 14 to 19 and 21 - 24		1.5 daN.m
screws of the cap of cylinder head 13 - 20 -22 -23		1.5 daN.m
screws from The box of Water exit from the butt		1 daN.m
manifold nuts escape		2,3 daN.m
screws from the screen thermal superior from escape		1 daN.m
oxygen probe		4.5 daN.m

**ENGINE AND LOWER ENGINE
ASSEMBLY** Stock: Undressed - Dress

10A

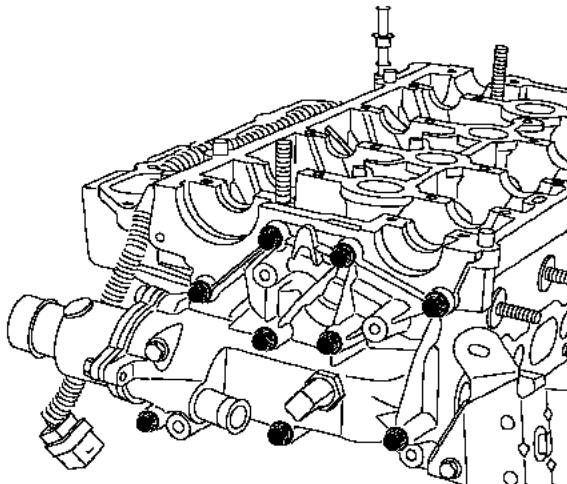
K4M



103290
103290

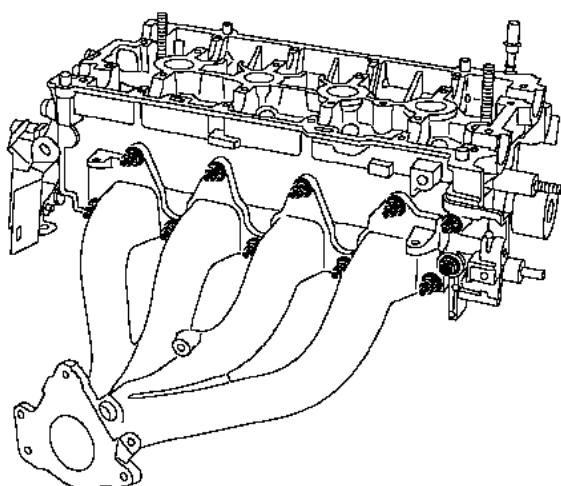
Extract:

- the oxygen probe using the tool (Mot. 1495),
- the upper heat shield of the exhaust manifold.



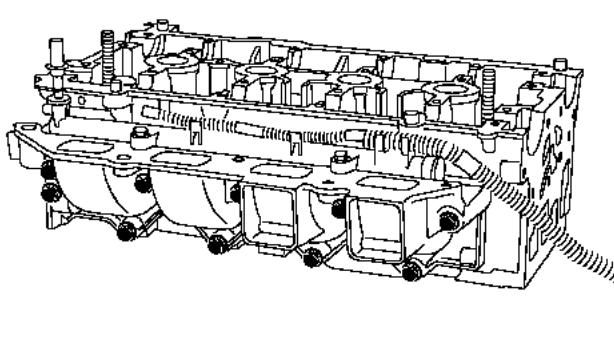
103311
103311

Remove the cylinder head outlet water box.



103314
103314

Remove the exhaust manifold.



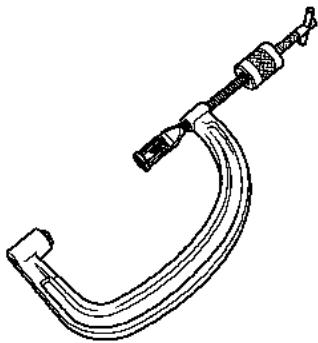
103313
103313

Remove the cleat from the injector holder.

**ENGINE AND LOWER ENGINE
ASSEMBLY** Stock: Undressed - Dress

10A

K4M

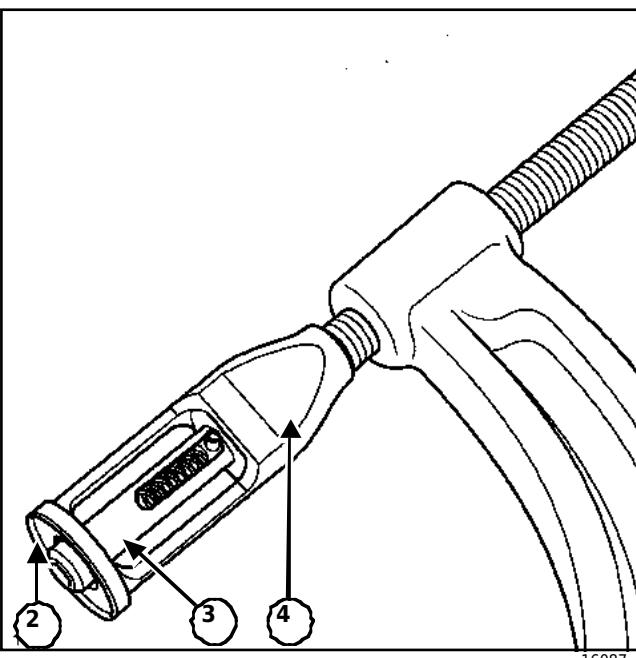


16088

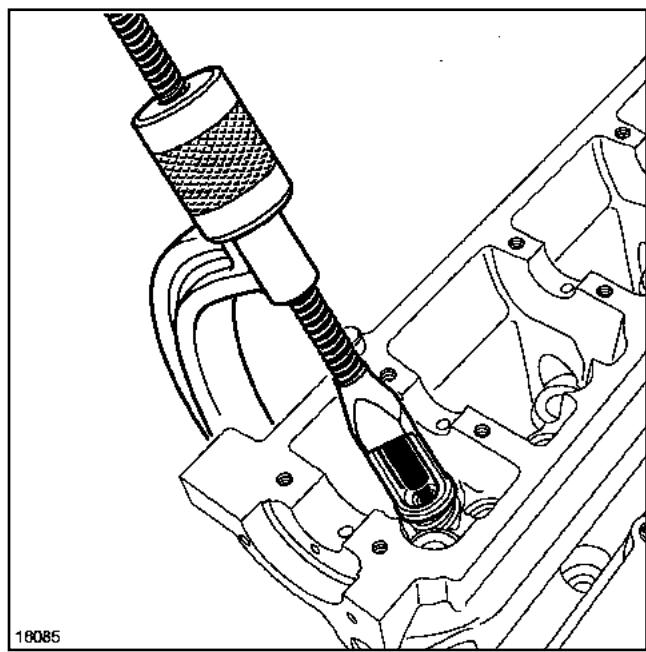
16088

The compression of the valve springs is carried out through (Mot. 1502).

K4M



16087



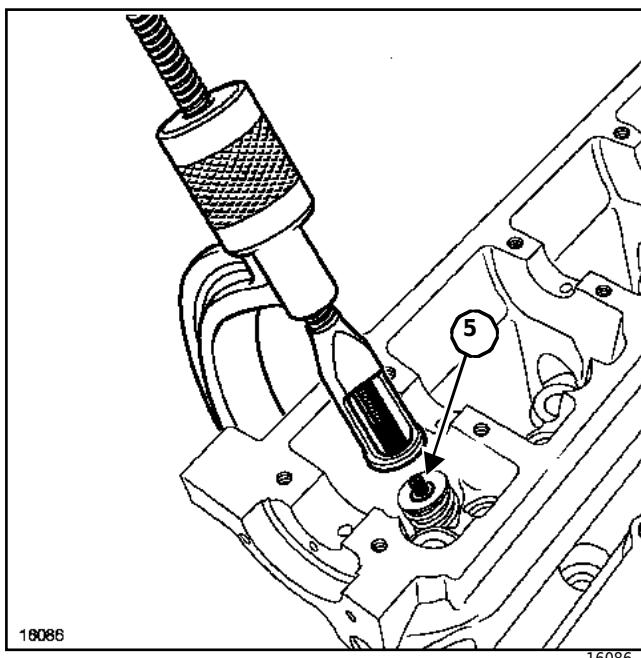
16085

To properly compress the springs of the valves, it is imperative that the piston (3) of (Mot.1502) is centered on the valve tail (5).

The upper cup of the valve spring must enter in the seat (2) of the bushing (4) of (Mot.1502).

Extract:

- the keys,
- the upper cups of the valve springs,
- valve springs,
- the valves,
- the seals of the valve guides with the help of the pliers (Mot. 1335).



16086

1 - Cleaning the cylinder head

IMPORTANT

Do not scratch the joint surfaces of the surfaces of aluminum.

Putting on glasses.

Put on gloves.

Clean the planes together with the product
DECAPJOINT to dissolve the joint part
that has been stuck.

Apply the product to the part to be cleaned tweet; wait
about ten minutes and then withdraw the residue with a
wooden spatula.

K4M

ATTENTION

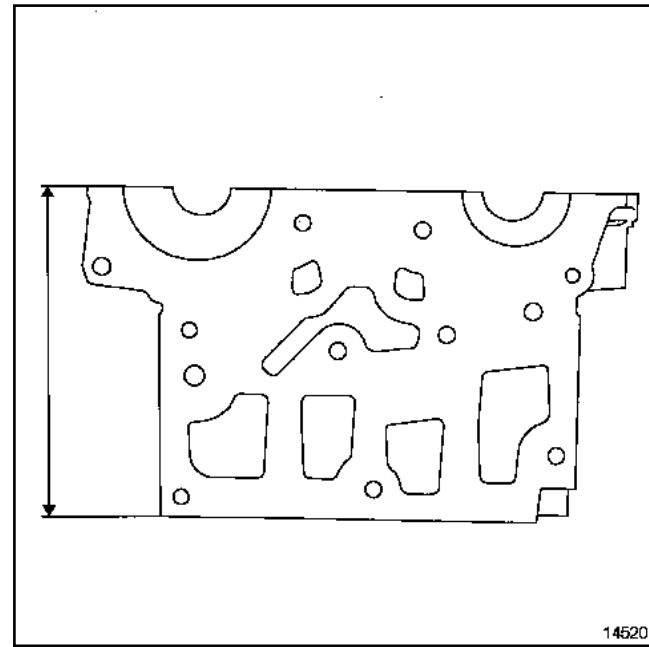
Do not drop product on the paintings.

Clean carefully to avoid entry can foreign bodies in the pipes of brought oil under pressure to the stop hydraulic, camshafts, (pipes located both on the engine block and on the cylinder head) and the oil return pipe.

Failure to respect this instruction can lead to clogging of the different intake ducts of oil and to provoke a deterioration fast of motor.

2 - Cylinder head control

a - Cylinder head height control



The height of the stock is **137 mm**.

b - Checking the cylinder head gasket plane

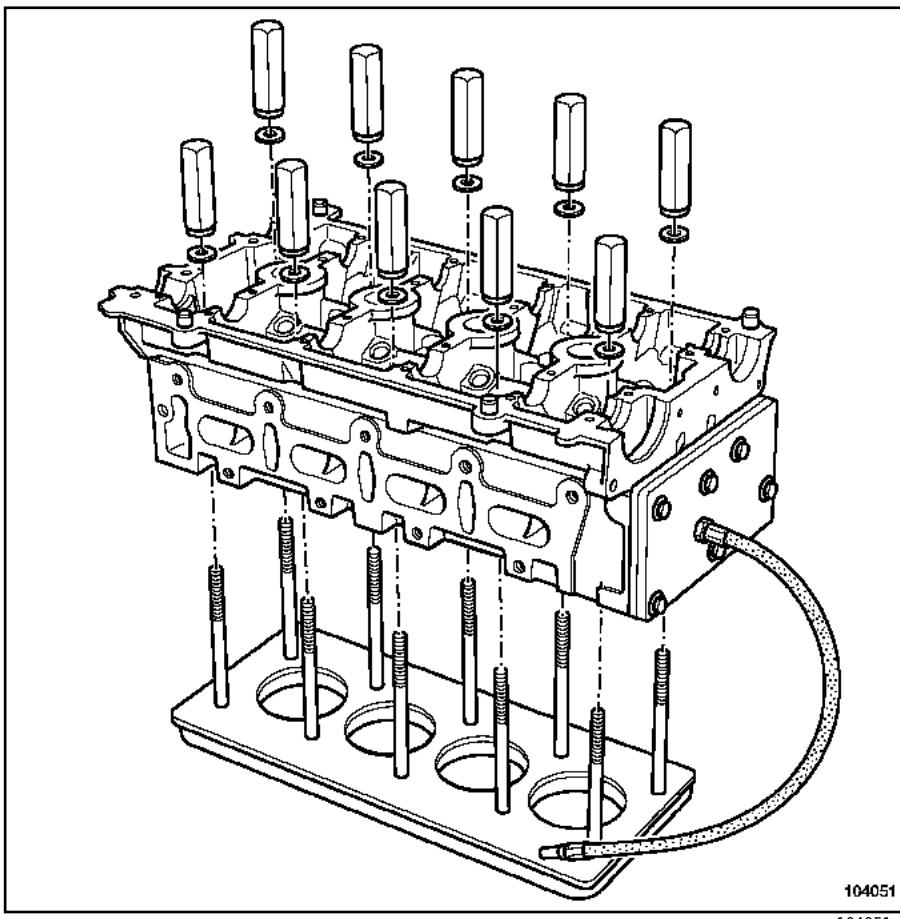
Verify, with a rule for the cylinder head and a set of calipers, the deformation of the joint plane that must not **0,05 mm**

ATTENTION

No grinding of the cylinder head is authorized.

K4M

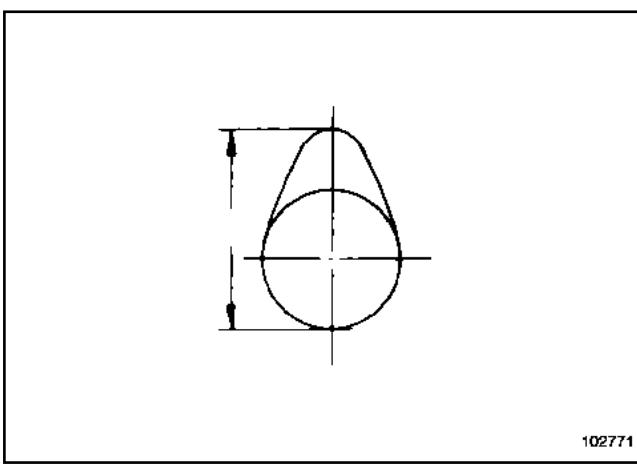
c - Checking the tightness of the cylinder head



Test the cylinder head for a possible crack
using the **tooling to check the cylinder head**.

e - Control of the diameters of the supports of the
Camshafts

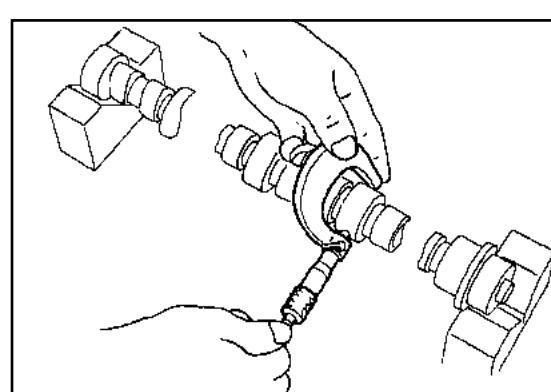
d - Cam height control



Measure the height of the cams:

-Admission **40,661 ± 0,04 mm**,

-Escape **40,038 ±±± 0,03 mm**.



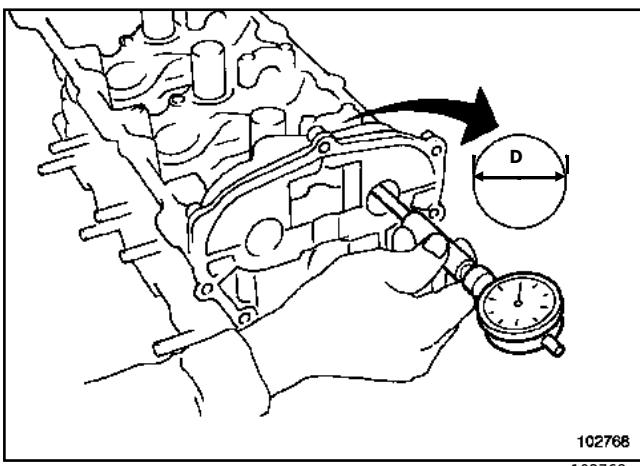
Measure the diameter of each bearing of the
shaftslevas.

Diameter of the camshaft bearings:

-apoyo n°1, 2, 3, 4, 5: **24,979 a 25 mm**,

-apoyo n°6: **27,979 a 28 mm**.

K4M



Measure the inside diameter of each tree support cylinder head cams.

Inner diameter of the tree supports you:

25,04 a 25,061 mm

28,04 a 28,061 mm

**f - Control of the longitudinal play of the axle
shaftslevas**

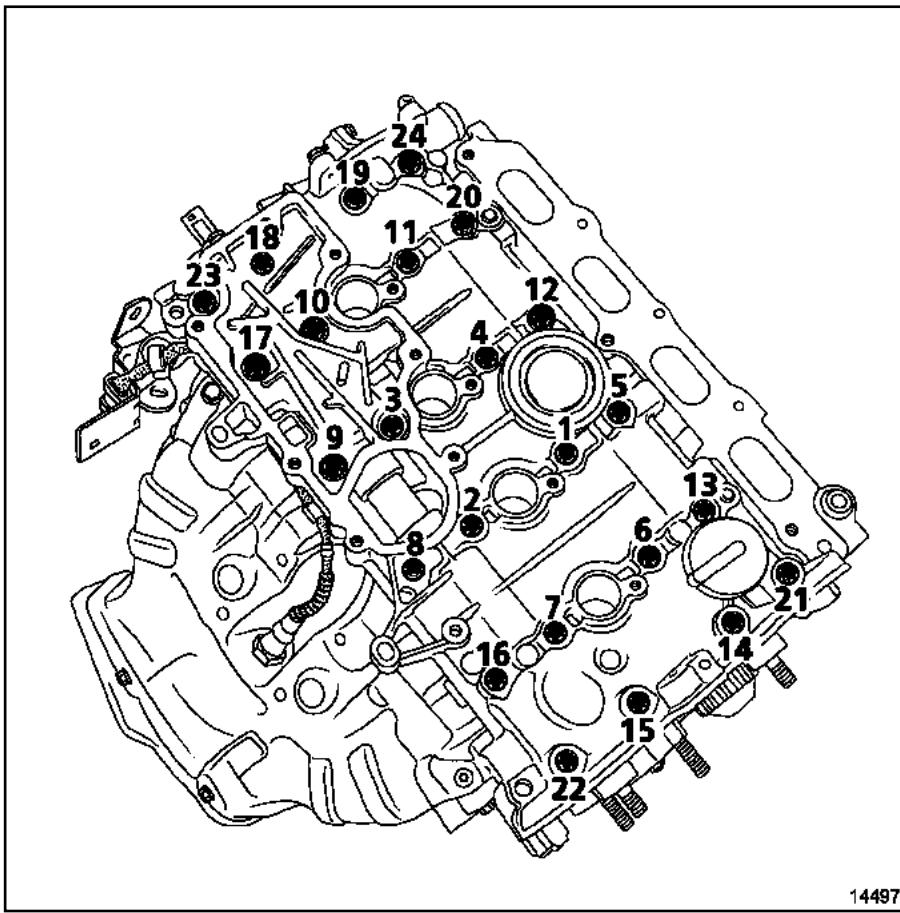
Put:

- the camshafts, positioning them correctly-
at (Chapter Engine and engine underbody assembly, Part-motor top tee: Features, page **10A-5**),
- the cylinder head cover.

**ENGINE AND LOWER ENGINE
ASSEMBLY** Stock: Undressed - Dress

10A

K4M



14497

14497

Fit the cylinder head cover.

Tighten in order and pairs:

-the bolts of the cylinder head cover 13 - 20 - 22 - 23

a **0.8 daN.m** ,

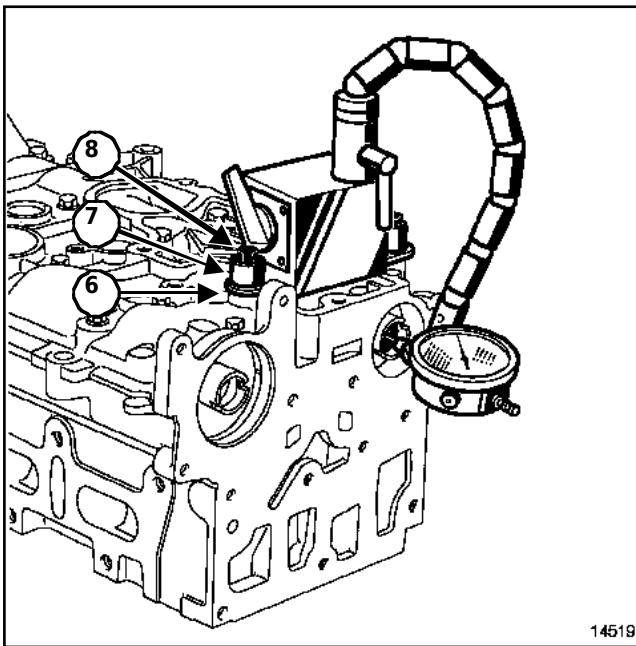
-the **bolts of the cylinder head cover from 1 to 12, from 14**

to 19 and 21 - 24 (1.5 daN.m) .

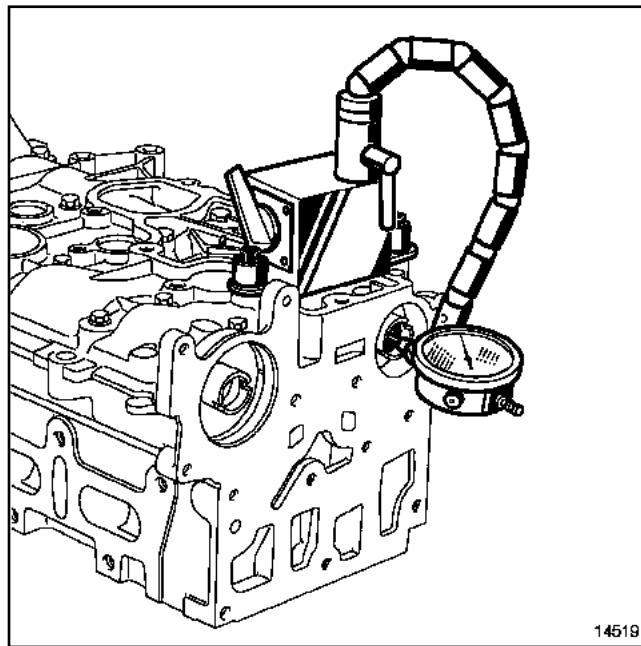
Loosen the cylinder head cover bolts 13 - 20 -
22 -23.

Tighten the cover screws in order and to torque
cylinder head 13 - 20 -22 -23 (1.5 daN.m) .

K4M



14519
14519



14519
14519

NOTE:

Fix the magnetic foot on the cylinder head, you must use a flange (6) from (Mot. 588) and fix it with help of the decantation fixing screws (8)

oil cooler and separators (7) whose dimensions are as follows:

-18mm outer **diameter**,

-diameter of the screw (8) through hole of **9**

mm

- height of **15 mm** .

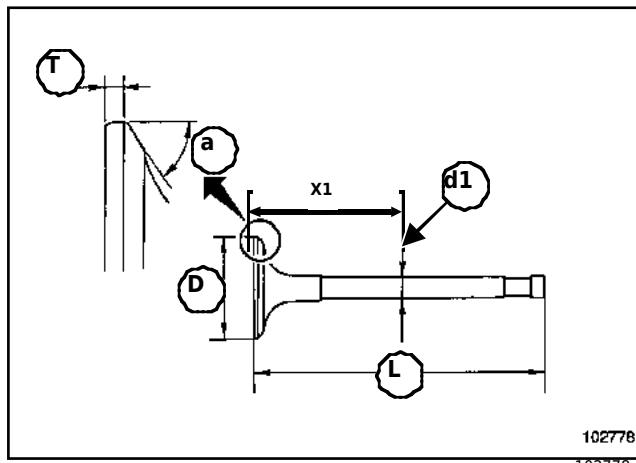
Check the longitudinal play that must be complete set between **0.08 and 0.178 mm** .

Extract:

- the cylinder head cover,
- camshafts.

K4M

g - Valve control



102778

Diameter (**d1**) of the valve stem is measured in (**X1**)

-Admission **75.14 ± 0.4 mm** **0.35 mm**, (**d1**) = **5.470 a 5,485 mm**

**X177,5 0,35 mm d15,456 a 5,
471 mm**

Valve head diameter (**D**)

-Admission **32.7 ± 12.12 mm**

27,96 0,12 mm

Valve length (**L**)

-Admission **109.32 mm**

107,64 mm

Seat angle (**A**)

-Intake and exhaust **45° 45' to 45°**

Head thickness (**T**)

-Admission **1.15 mm**

1,27 mm

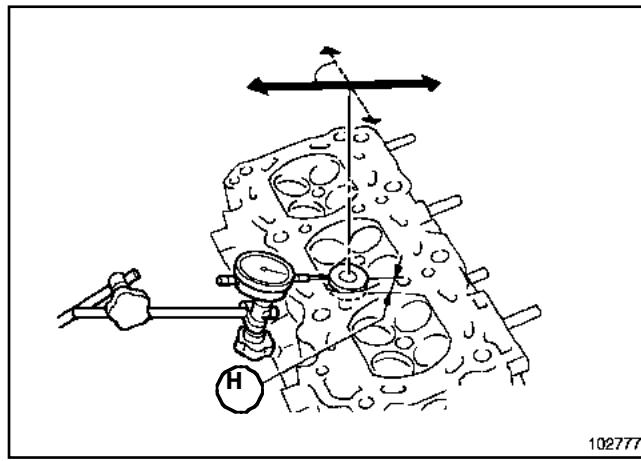
Valve lift

-Admission **9.221 mm**

8,075 mm

h - Checking the clearance between the valve and the guide

Checking the clearance between the valve and the guidelt can be done in two ways.

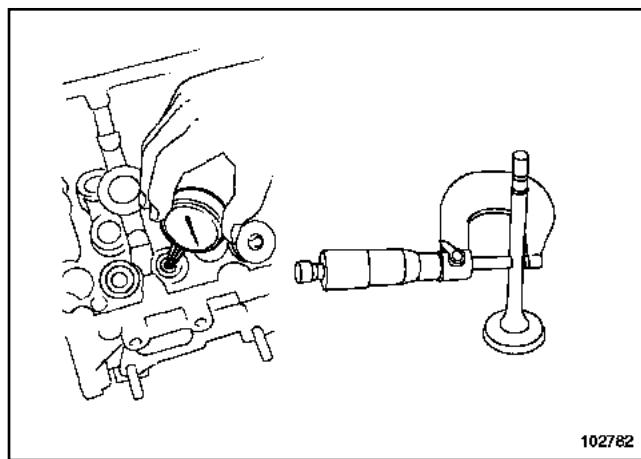


102777

102777

First form:

-Make the valve head protrude a height of **25 mm**, and then with the help of a dial gauge , carry out the measurement in the direction of the arrows applying an angle of **90°** with respect to the axis of the shaft cam. Half of the value obtained corresponds to the clearance between the valve and the guide.



102782

102782

Second way:

-Note the diameter of the valve tail and the diameterinner meter of valve guide.

Clearance between valve and guide:

Normal game:

-Admission: **0.015 to 0.048 mm**,
0,029 a 0,062 mm

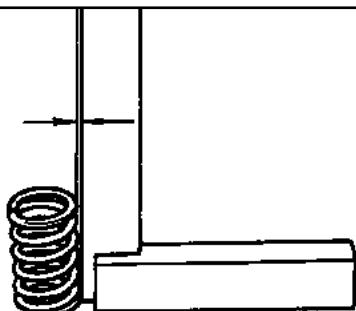
ENGINE AND LOWER ENGINE ASSEMBLY

Stock: Undressed - Dress

10A

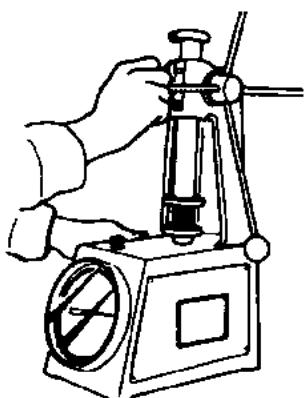
K4M

i - Checking the valve springs



102774
102774

Check the perpendicularity of the spring, it should not be superior to **1,2 mm**



102776
102776

Check the spring setting:

Length under load of:

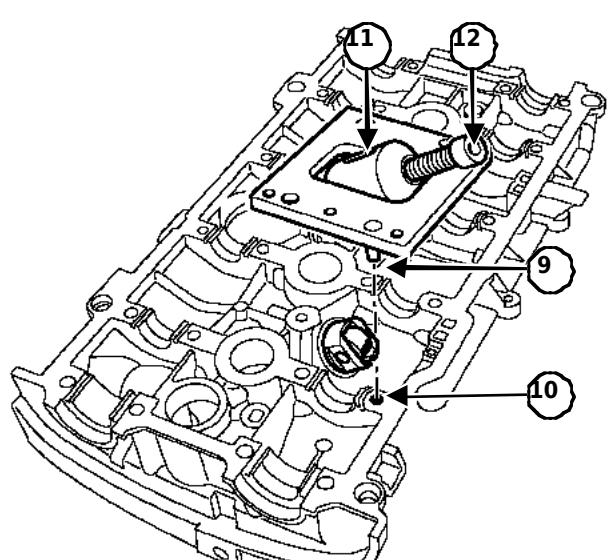
-Under a load of **18 to 20 daN** the length of the spring-
the es of **34.50 mm**,

-Under a load of **56.3 to 61.7 daN** the length of the spring is **24.50 mm**.

Free length: **41.30 mm**.

3 - Replacement of the square cam follower

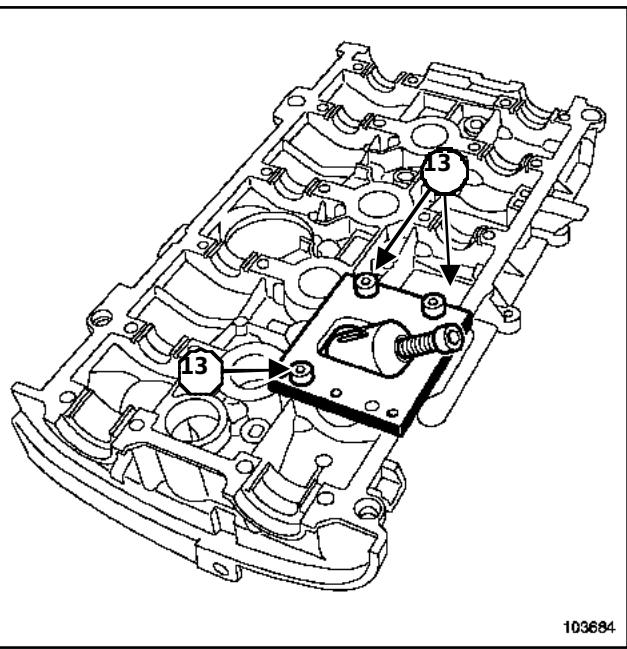
a - Removal of the tappet



103685
103685

Bring the pin (**11**) of the tool (Mot. 1669) to the stop in the bottom of the slot by loosening the screw (**12**).

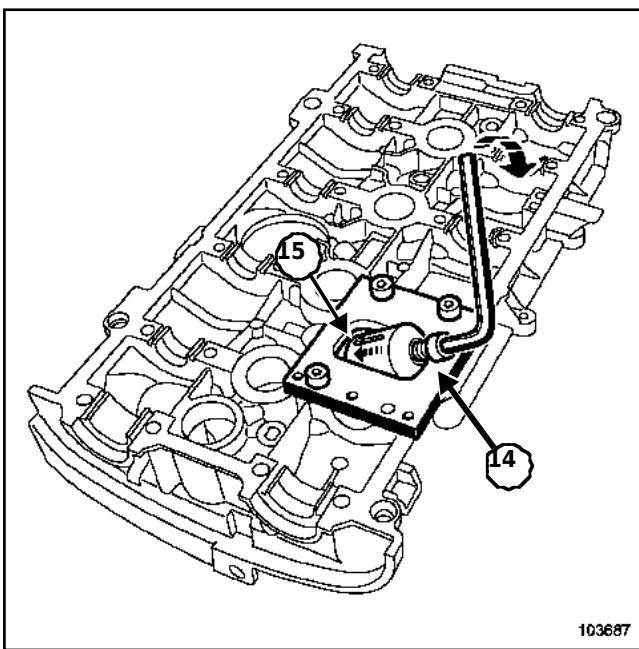
Fit the tool (Mot. 1669) on the cylinder head cover, positionspositioning the pawn (**9**) correctly in the hole(**10**) from the cylinder head cover.



103684
103684

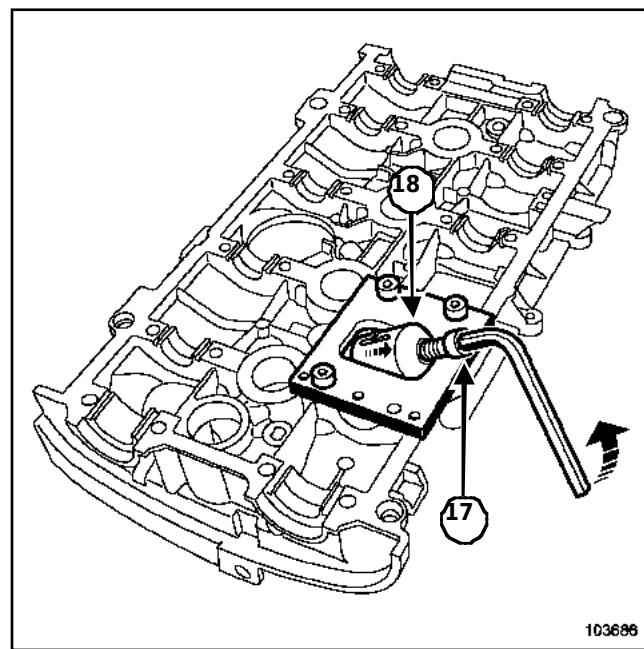
Fix the tool (Mot. 1669) on the cylinder head cover usingthe three bolts (**13**).

K4M



103687
103687

Screw in the screw (**14**) until the pin (**15**) reaches all the way to the bottom of the groove.



103686
103686

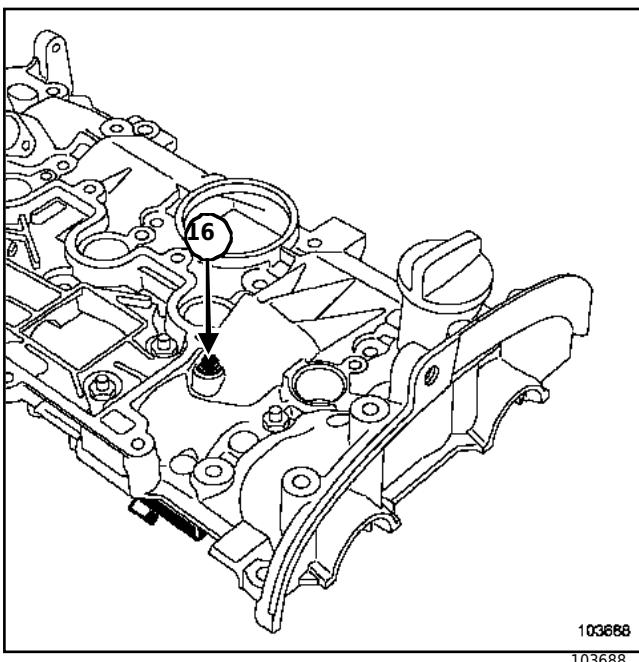
Loosen the screw (**17**) to bring the pin (**18**) to stop at the bottom of the groove.

Remove the tool (Mot. 1669) from the cylinder head cover.

Extract:

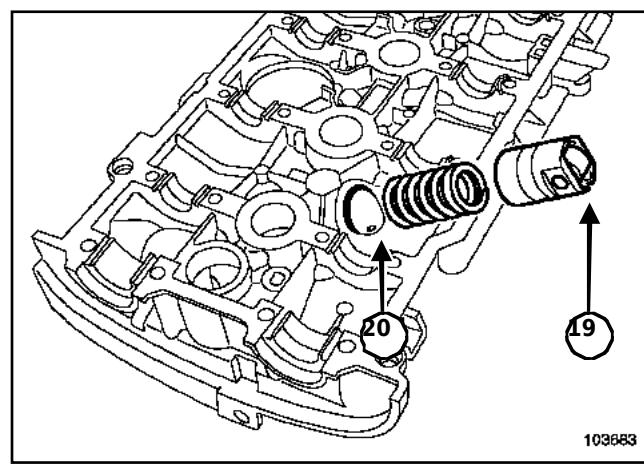
- the pusher,
- the pier.

b - Repositioning the tappet



103688
103688

Remove the tappet locking screw (**16**).

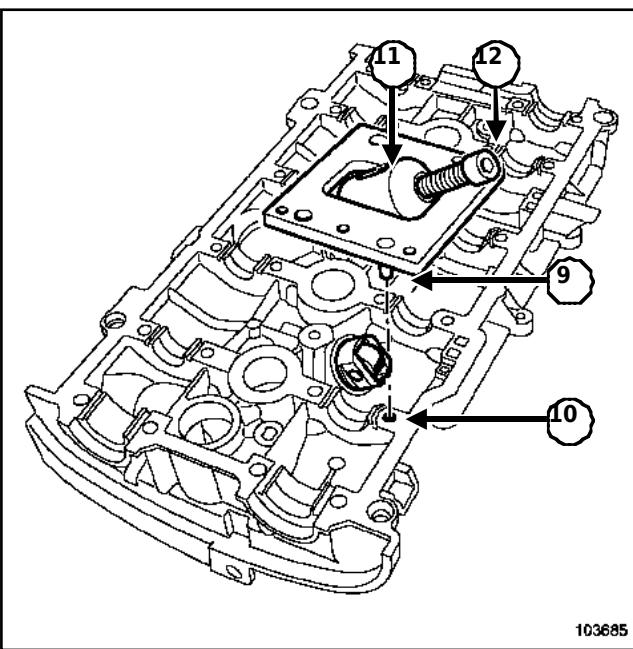


103683
103683

Put:

- the pier,
- the pusher aligning the groove (**19**) of the pusher-hole (**20**) in the cylinder head cover.

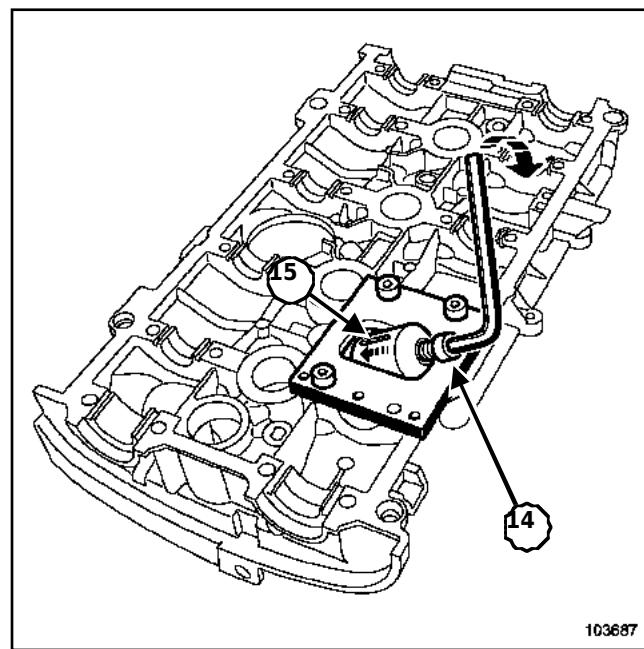
K4M



103685
103685

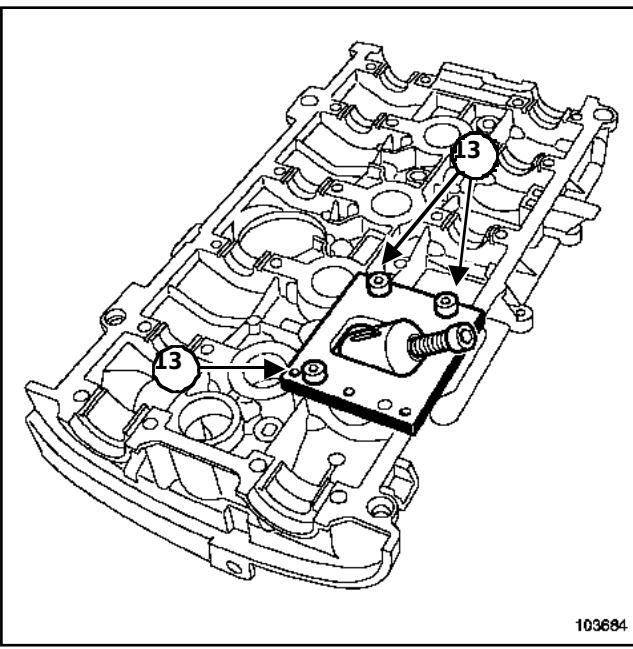
Bring the pin (11) of the tool (Mot. 1669) to the stop in the bottom of the slot by loosening the screw (12).

Fit the tool (Mot. 1669) on the cylinder head cover, positioning the pawn (9) correctly in the hole (10) from the cylinder head cover.



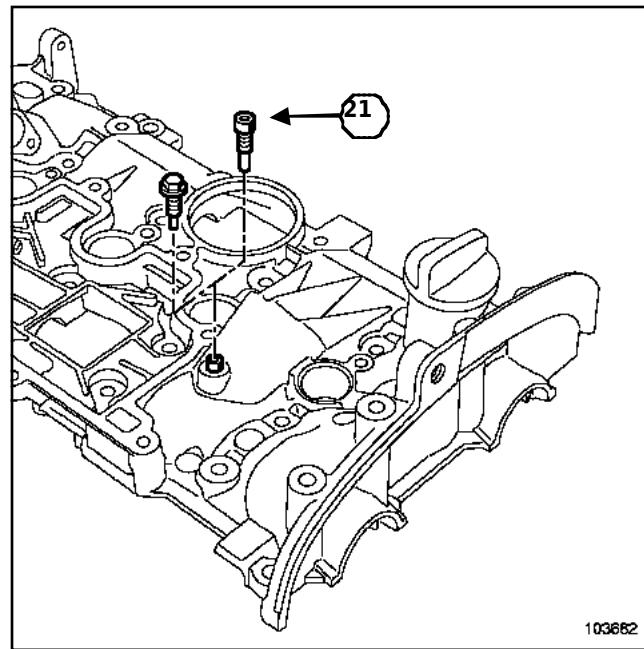
103687
103687

Screw in the screw (14) until the pin (15) reaches all the way to the bottom of the groove.



103684

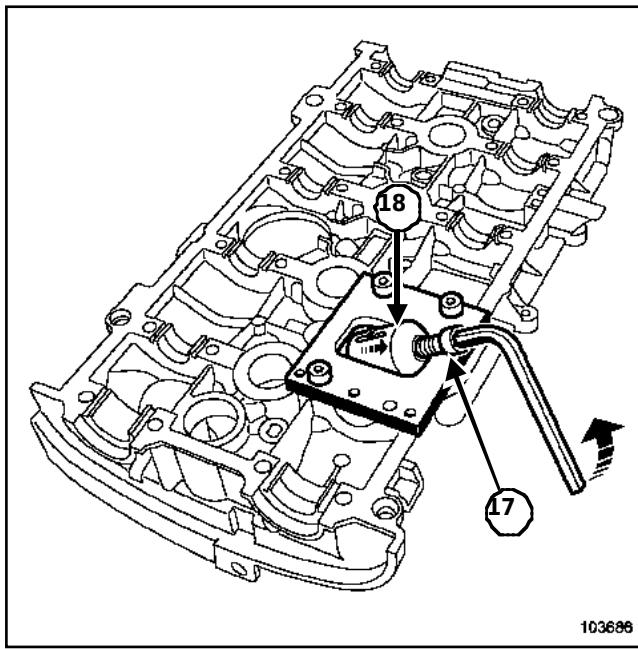
Fix the tool (Mot. 1669) on the cylinder head cover using the three bolts (13).



103682
103682

Screw in the hollow hexagonal screw (21) of the tool (Mot. 1669) on the cylinder head cover to block the bidder.

K4M

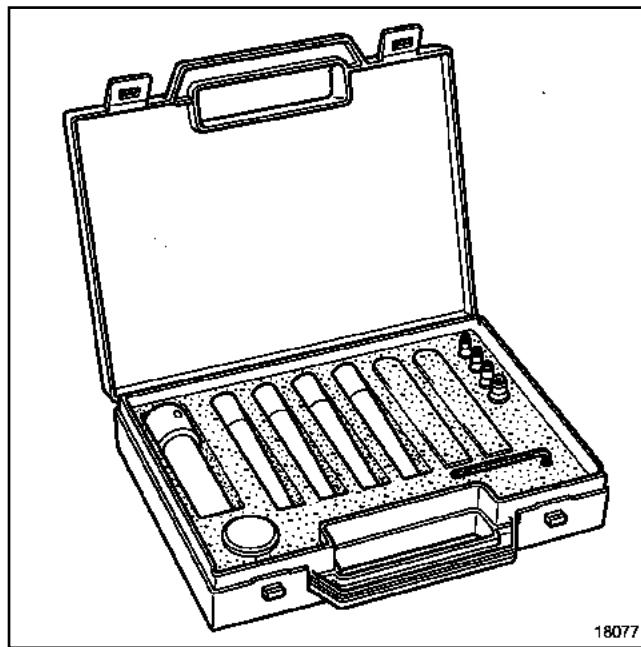
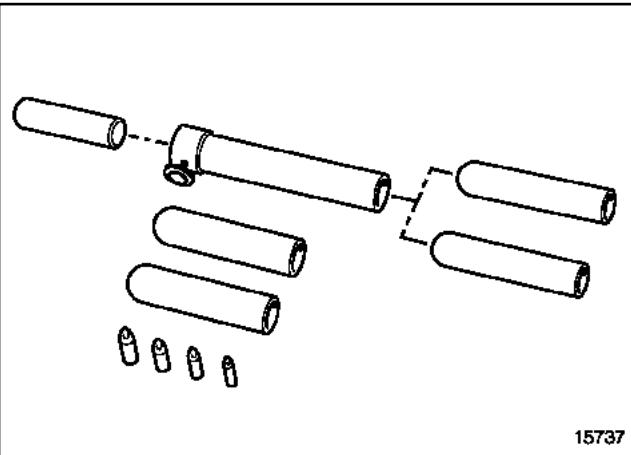


Loosen the screw (17) to bring the pin (18) to stop at the bottom of the groove.

Remove the tool (Mot. 1669) from the cylinder head cover.

II - HEAD DRESS

K4M, and 760 or 761

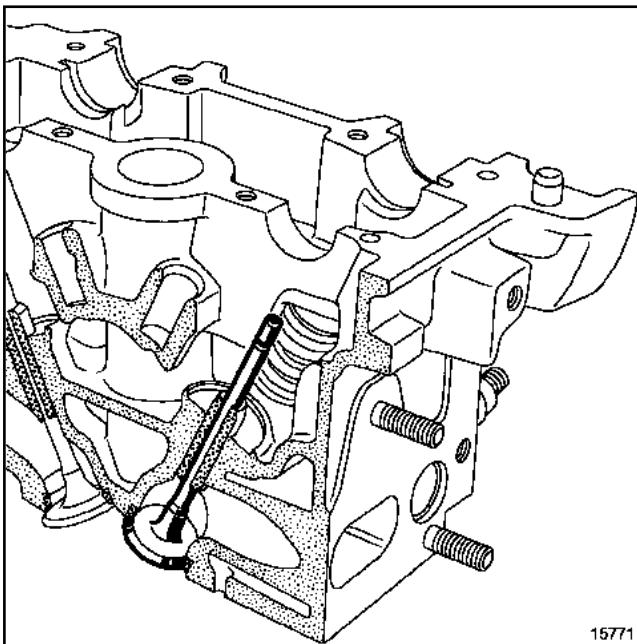


It is imperative to fit the valve stem seals valves with (Mot. 1511) or with the help of the material **case for fitting the glue joints valve**

**ENGINE AND LOWER ENGINE
ASSEMBLY**
Stock: Undressed - Dress

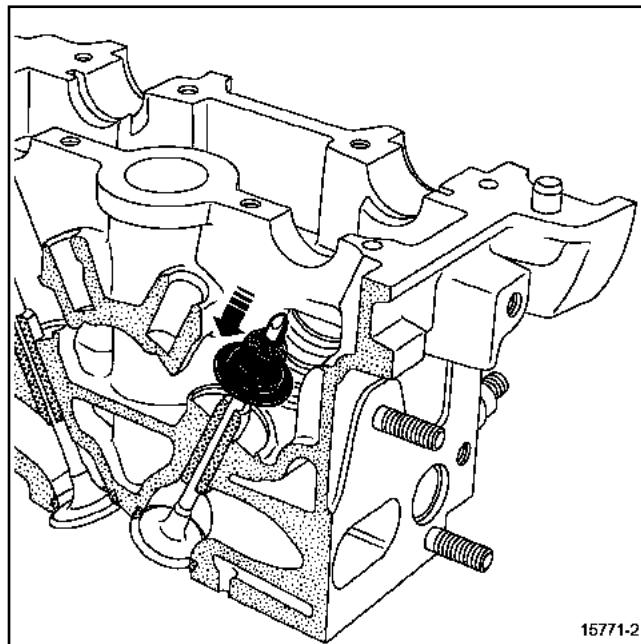
10A

K4M



15771
15771

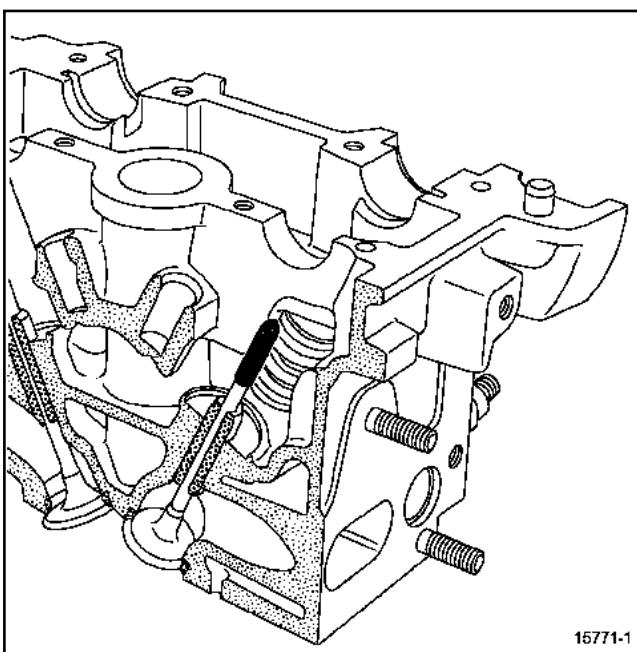
Place the valve on the cylinder head.



15771-2
15771

Fit the valve stem gasket (not oiled)
on the howitzer.

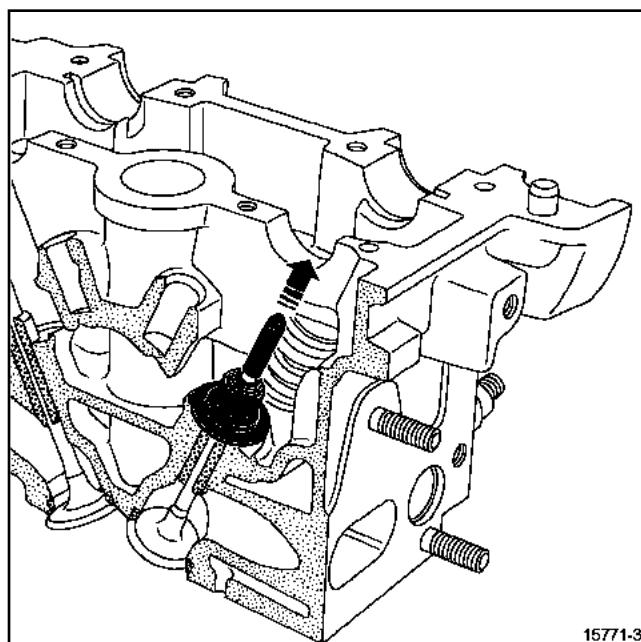
Push on the valve tail seal until it gets past the
howitzer.



15771-1
15771

Place the core of (Mot. 1511) on the tail of the valve(the
inside diameter of the howitzer must be the same as that of
the valve tail).

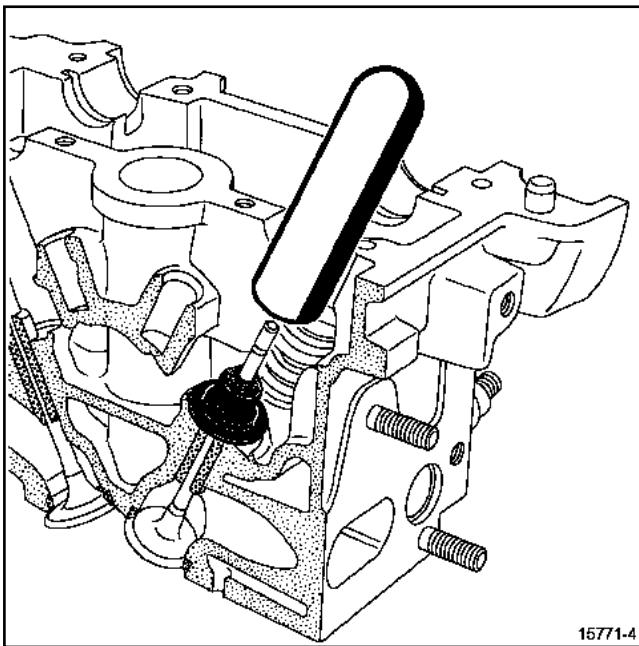
Keep the valve resting on its seat.



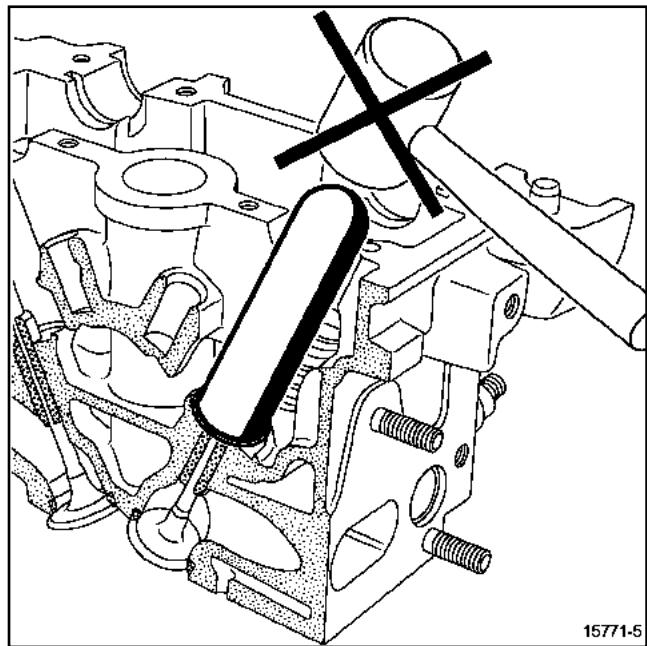
15771-3
15771

Remove the shell.

K4M



15771-4
15771-4

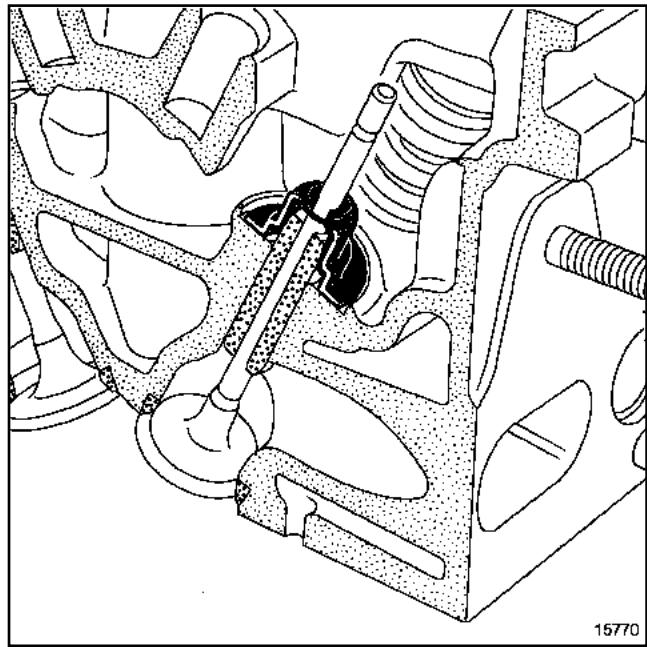


15771-5
15771-5

Put the push rod in the tail seal of the valve.

NOTE:

The inside diameter of the push rod must be the same as the valve tail. Also, the bottom of the pushrod must rest on the part of the glue joint valve that serves as a lower support washer for the valve spring.



15770
15770

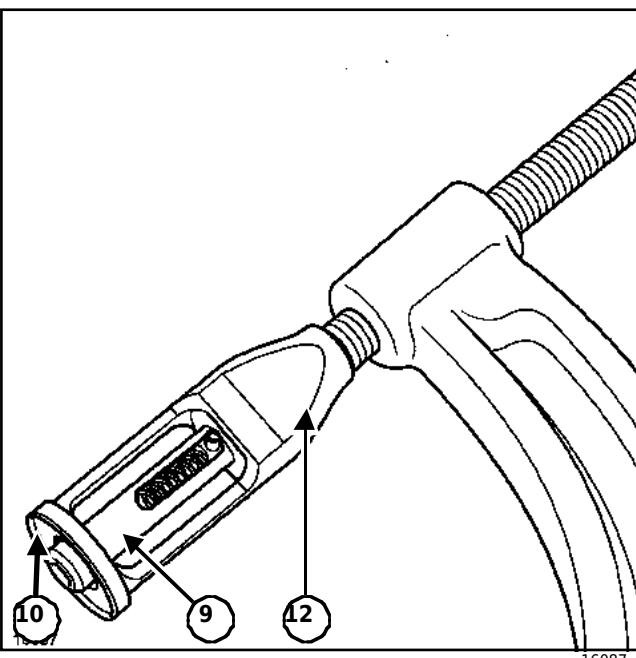
Insert the valve tail gasket by tapping with the palm of the hand on top of the push rod, up to the contact of the gasket valve tail with cylinder head.

Repeat the above operations in all the valves. the wombs.

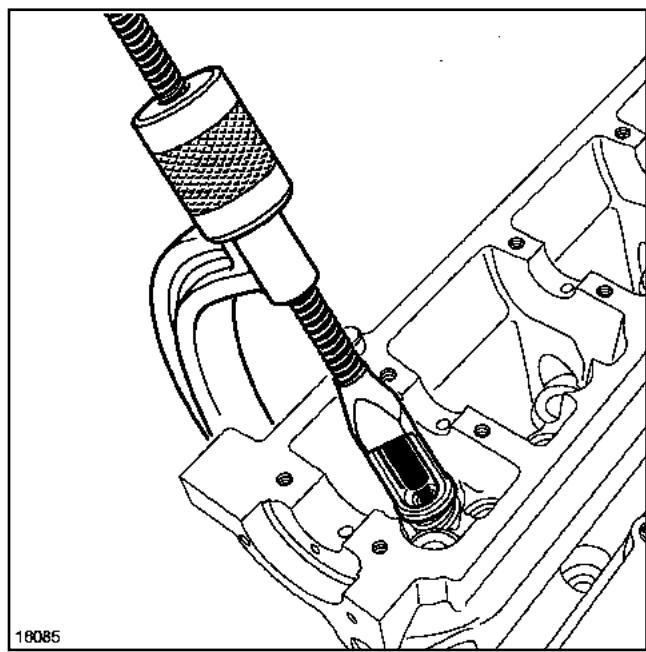
Put:

- the quays,
- the upper cups.

K4M



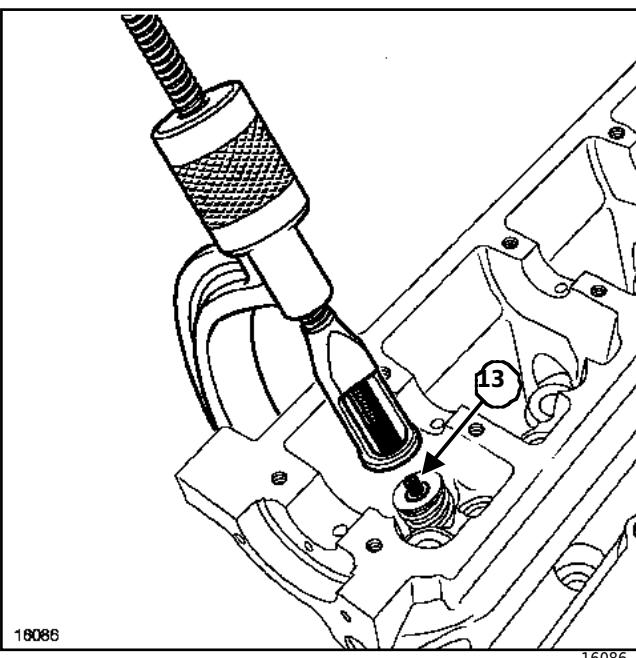
16087



16085

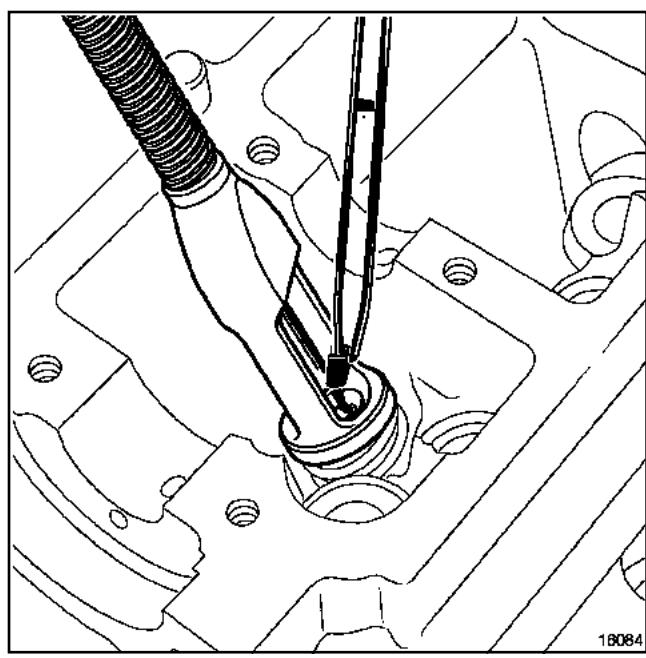
To properly compress the springs of the valves, it is imperative that the piston (9) of (Mot.1502) is centered on the tail of the valve (13).

The upper cup of the valve spring must enter in the housing (10) of the bushing (12) of (Mot.1502).



16086

16086

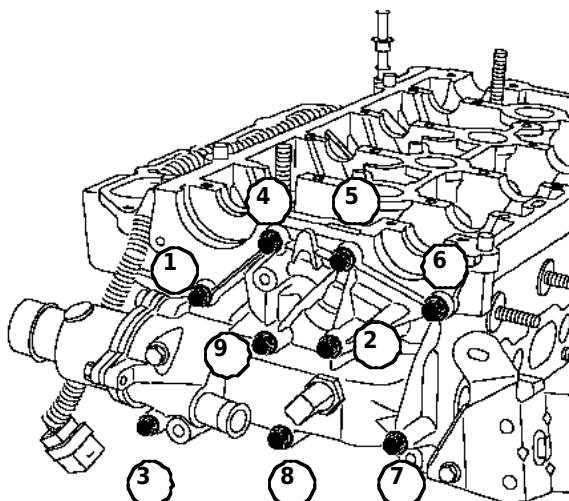


16084

16084

Position the keys with the help of a fine pliers (ti-po brussels).

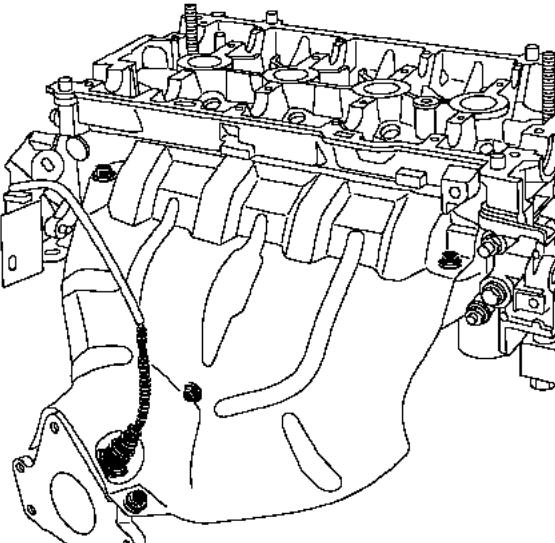
K4M



103311

Fit the outlet water box of the cylinder head equi-
pad with a new gasket.

**Tighten the box screws in order and to torque
cylinder head outlet water (1 daN.m) .**



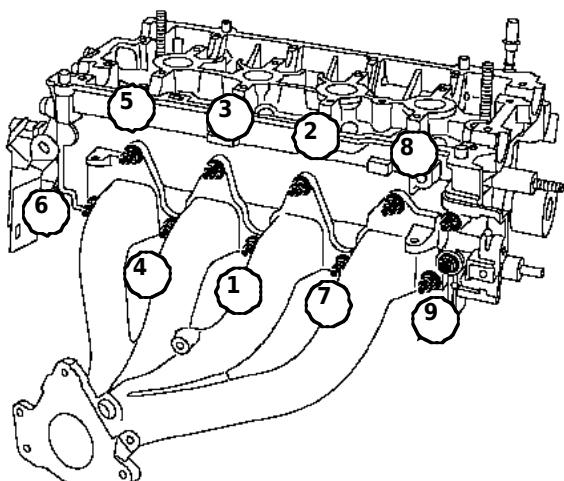
103290

Fit the upper exhaust heat shield.

**Tighten the screws of the heat shield to torque
top exhaust (1 daN.m) .**

Fit the oxygen probe.

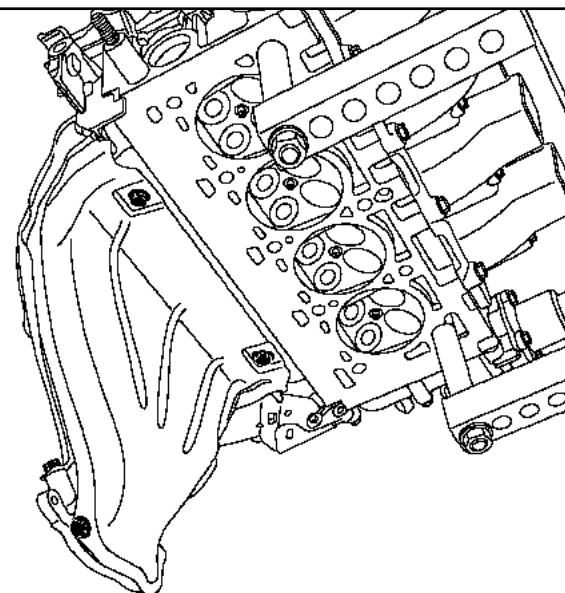
Torque the **oxygen probe** (4.5 daN.m)
using the tool (Mot. 1495).



103314

Fit the exhaust manifold equipped with a gasket
new one.

**Tighten the manifold nuts in order and to torque
exhaust (2,3 daN.m) .**



103291

Fit the lower exhaust heat shield.

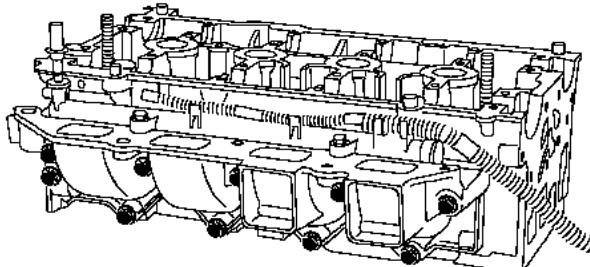
**Tighten the screws of the heat shield to torque
lower exhaust (1 daN.m) .**

ENGINE AND LOWER ENGINE ASSEMBLY

Stock: Undressed - Dress

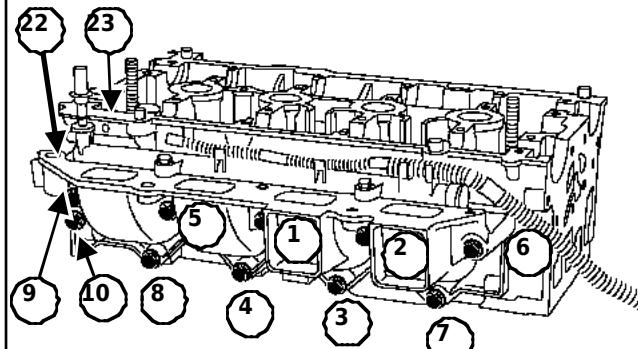
10A

K4M



103313
103313

Fit the injector holder cleat equipped with a new gasket.

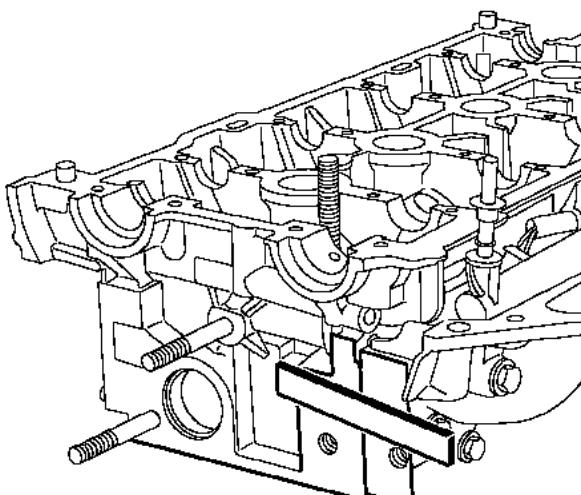


103313
103313

Position the top face (**22**) of the carrier bay.
nozzle **32 mm** from the joint plane (**23**) of the cover
cylinder head with the help of a depth probe.

**Tighten the cleat bolts in order and to torque
of the injector holder (2.1 daN.m) .**

Torque tighten **screws 1 and 2 of the bracket shim.
tainerector (2.5 daN.m) .**



103312
103312

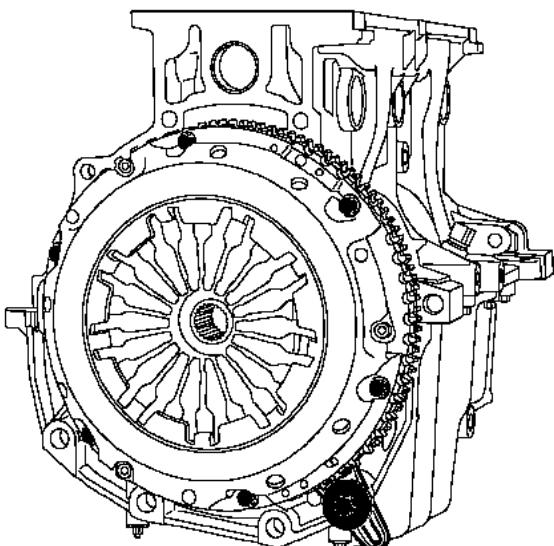
Align the injector holder cleat with the cylinder
head(distribution side).

Essential specialized tooling	
Against. 582-01	Immobilization sector flywheel (K motors)
Against. 1677	Immobilization sector flywheel (F engines)
Against. 1485	Useful for extract the coolers of piston bottom
Against. 1485-01	Useful for extract the coolers of piston bottom
Emb. 880	Past Extractor-res
Against. 574-22	Tools for replace piston pins
Against. 1494	Useful for replacement of the refrigerators piston bottom
Against. 1493-01	Useful for centering cushions netes from support of crankshaft (K engines)
Against. 1492	useful for put the connecting rod bearings
Against. 574-24	Axis A 13-01, replaces to the A13 axis to place the piston pin
Against. 1129-01	Useful for put the sealing gasket of crankshaft side steering wheel (joint 80 x 100x 8) (E and K motors)
Against. 1385	Useful for positioning the side crankshaft gasket distribution (35 x 47 x 7)
Emb. 1518	Collection from central friction heaters clutch

Essential material
Piston mounting bushing with rings inShirt

Tightening torques m	
cap screws retes from props of crankshaft	2.5 daN.m + 47° 5°
cap screws retes from props of crankshaft	2.5 daN.m + 47° ±±± 5°
cap screws retes from props of crankshaft	2.5 daN.m + 47° ±±± 5°
cap nuts the connecting rod	2 daN.m + 45° 6°
pump bolts oil	2.5 daN.m
screws of sump from crankshaft seal	1,2 daN.m
M6 pump bolts of water	1.1 daN.m
M8 pump screw of water	2.2 daN.m
lower crankcase bolts oil ior	1.4 daN.m
probe of level from oil	2 daN.m
chopped pickup	2 daN.m
pressure sensor oil	3.2 daN.m
screws of steering wheel motor	5.5 daN.m
mechanism screws Of the clutch	0.8 daN.m

I - MOUNTING THE UNDER ENGINE

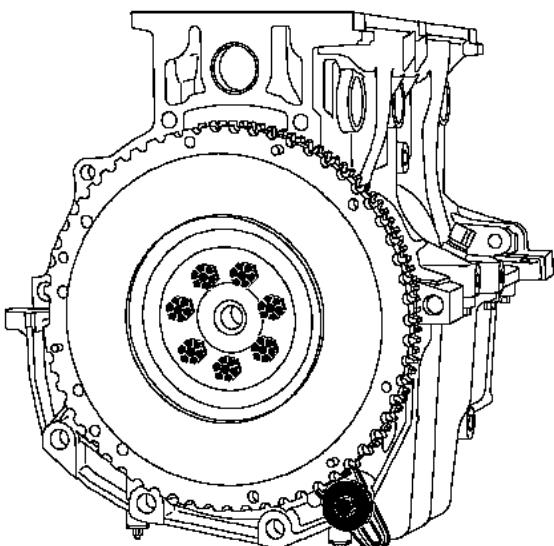


103286

Refit the flywheel lock
01) o (Mot. 1677).

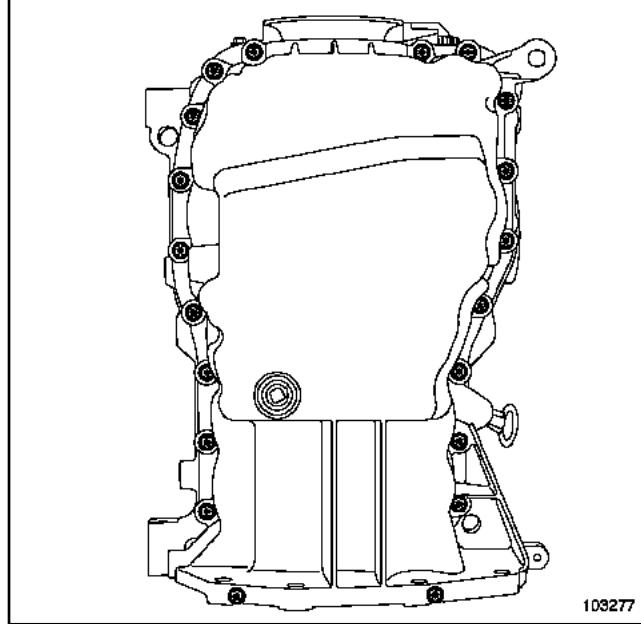
(Mot. 582-

Remove the mechanism and the clutch disc.



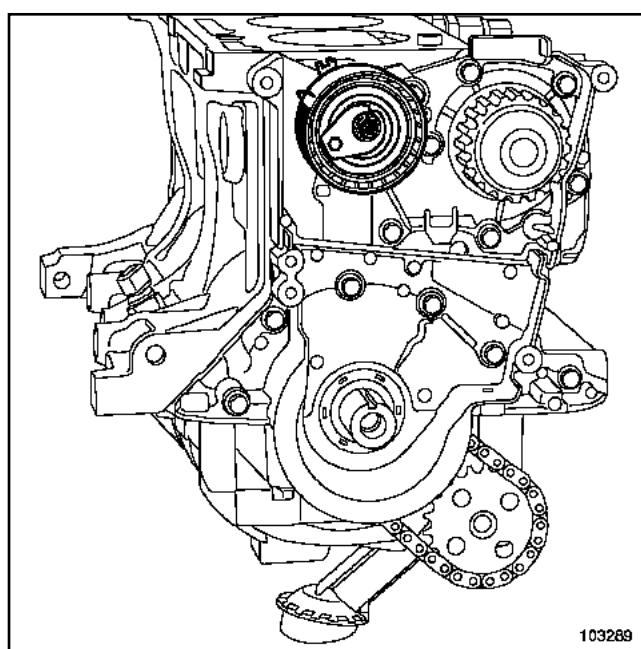
103284

Remove the flywheel.



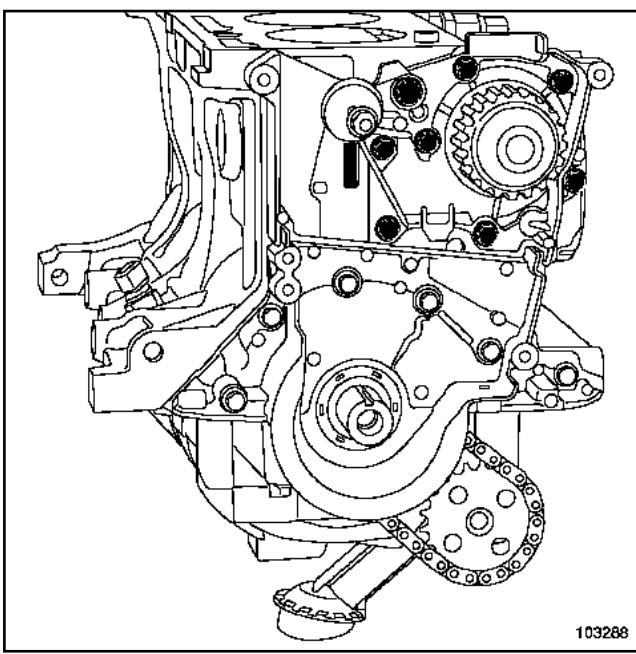
103277

Remove the lower casing.

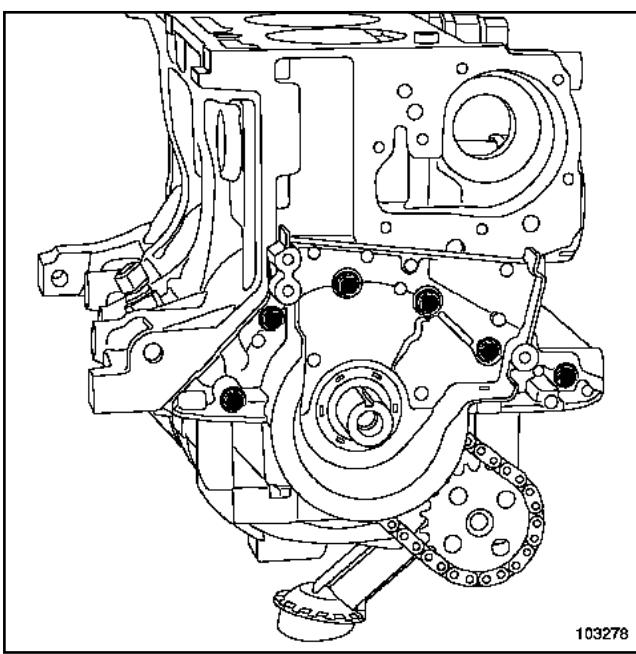


103289

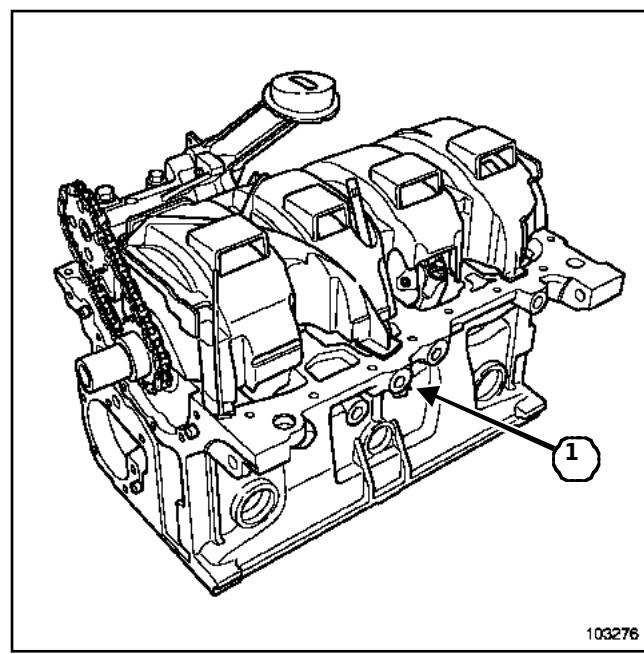
Remove the timing tensioner roller.



Remove the water pump.

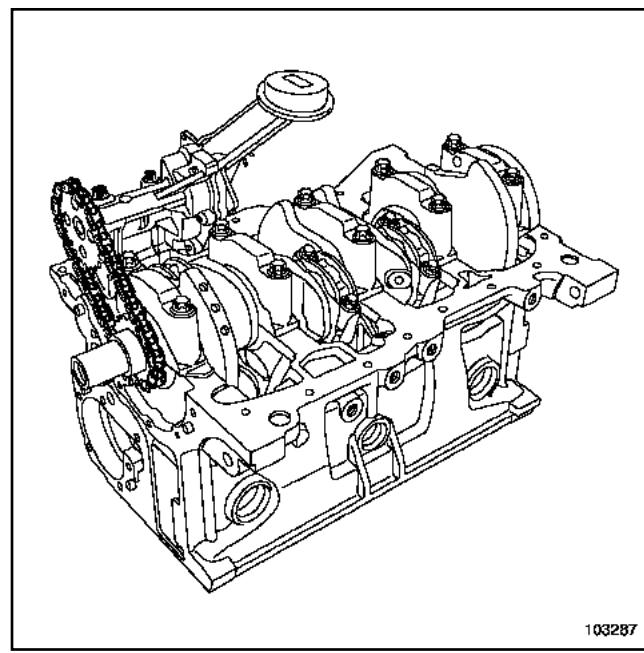


Remove the crankshaft seal housing.



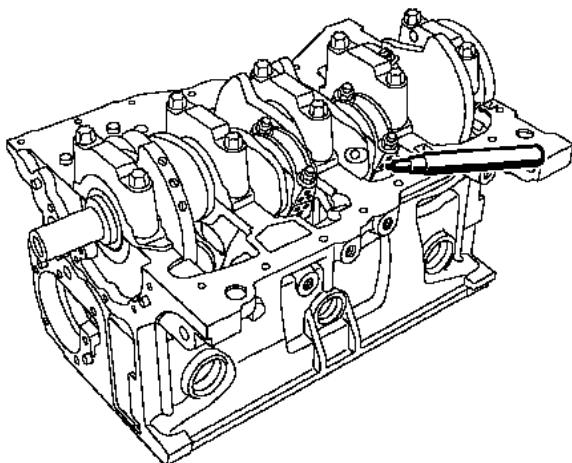
Extract:

- the oil level sensor (1),
- the antiemulsion plate.



Extract:

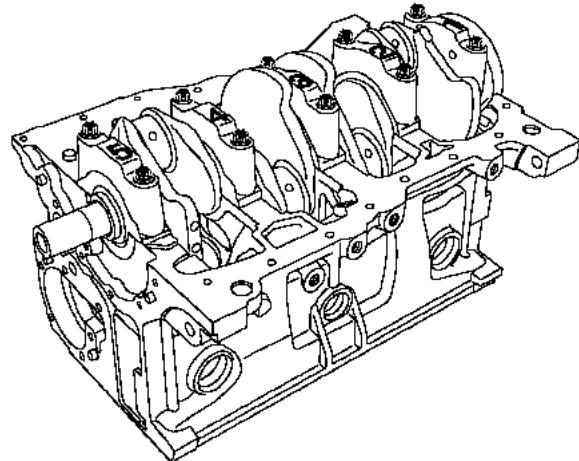
- the oil pump,
- the oil pump chain.



103280
103280

NOTE:

It is imperative to note the position of the bearing crankshaft tees, as the class may be differentrent in each support.

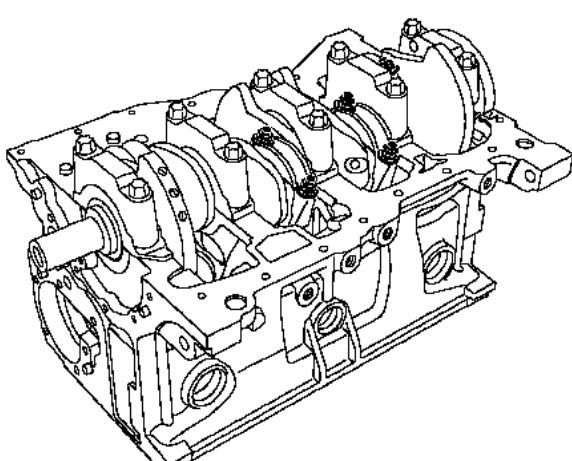


103282
103282

ATTENTION

Do not use any punch or engraving apparatus for the identification of the bonnet caps with respect to their bodies, in order to

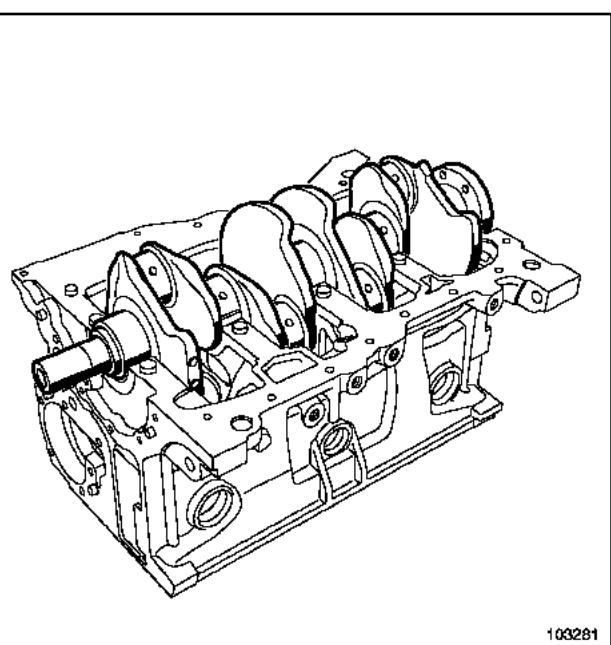
There is a threat of the connecting rod breaking. Use a indelible marker.



103279
103279

Extract:

- the nuts of the connecting rod caps,
- the "connecting rods - pistons" assemblies.

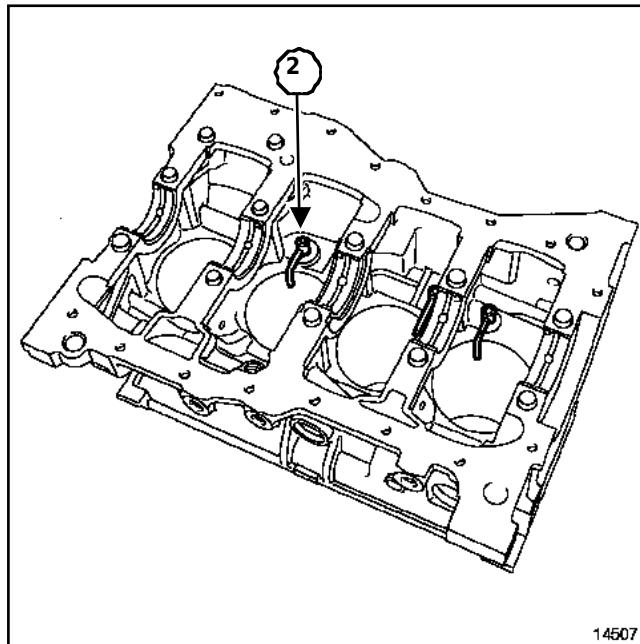


103281
103281

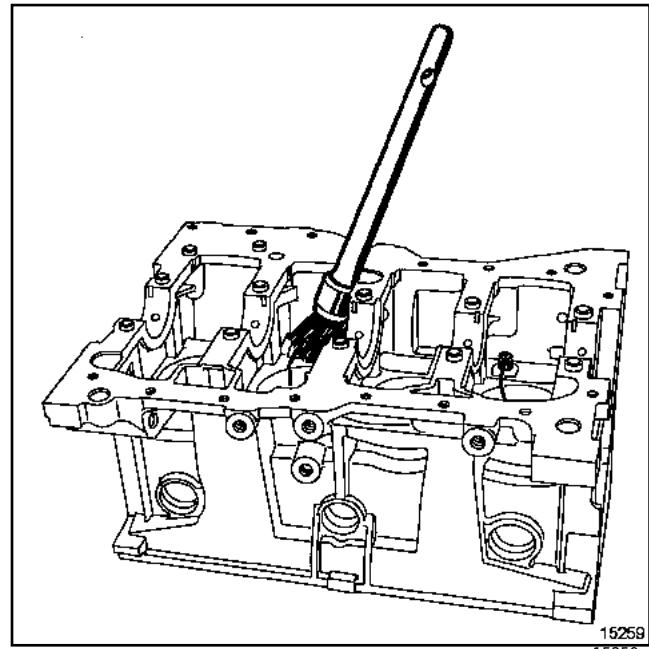
Extract:

- the crankshaft bearing caps (the caps support cuffs are numbered from 1 to 5),
- the crankshaft.

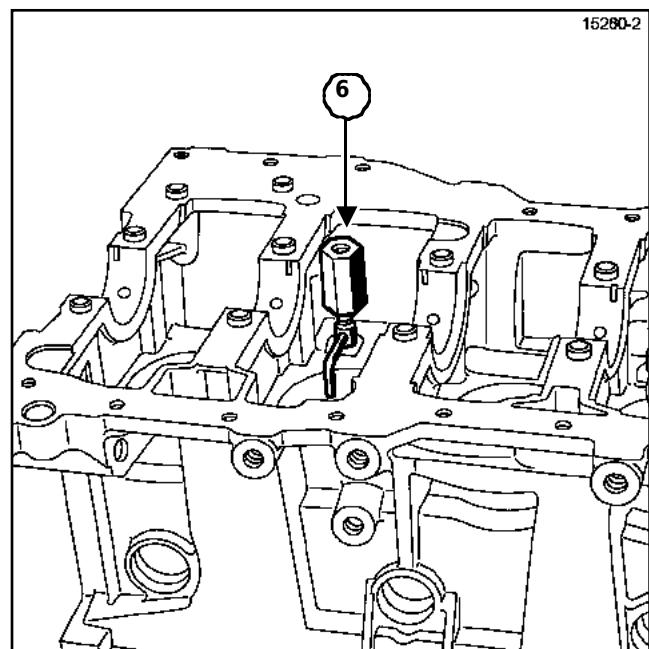
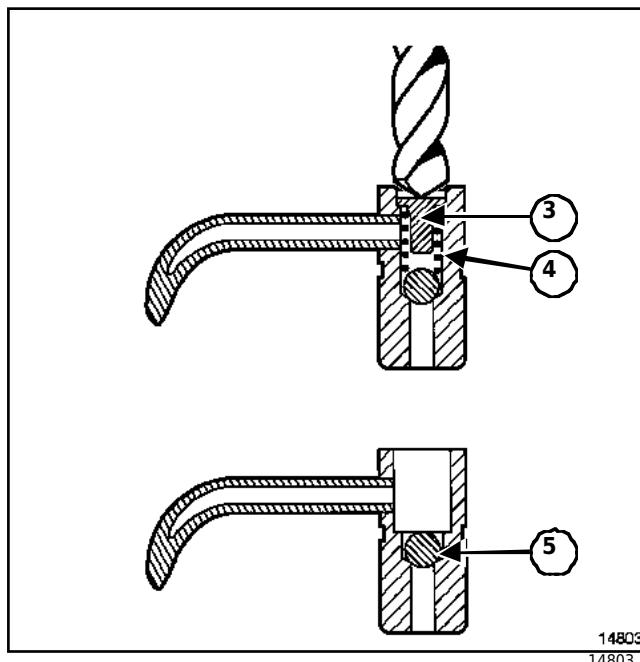
1 - Removing the cooling jets from the piston bottom



-the spring (4).



Remove the filing with a brush.



15260-2Screw the (Mot. 1485) or
(Mot.1485-01) (6) using a 6 mm hexagon
wrench

(to be slid inside the tool).

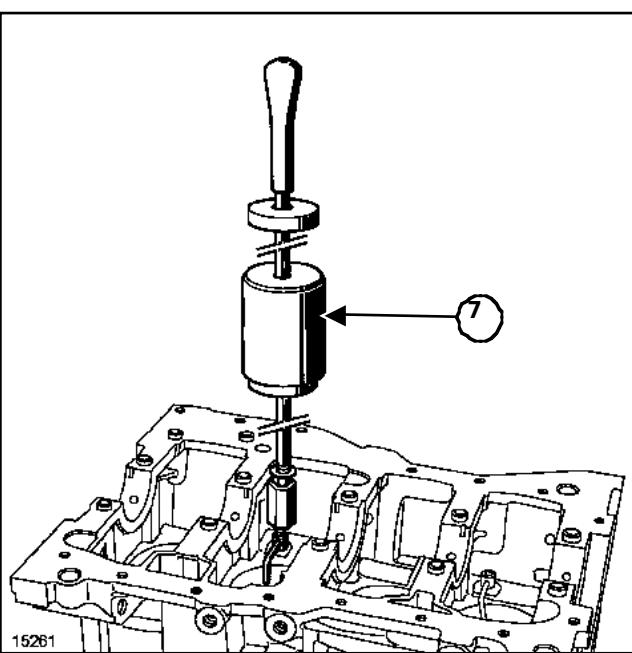
NOTE:

The ball (5) must not be removed , to prevent the filings fall into the oil circuit.

Drill the cooling jets at the bottom of the piston (2) using a 7 diameter drill bit mm

Extract:

-the spring stop (3),



15261Screw the inertia extractor (Emb. 880) (7) into the(Mot. 1485) o el (Mot. 1485-01).

Remove the spout.

2 - Cleaning the engine underbody

Clean up:

- the engine block,
- the crankshaft,
- the lower oil pan,
- the crankshaft closing housing,
- the crankshaft bearing caps.

IMPORTANT

Do not scratch the joint planes of the surfaces of aluminum.

Putting on glasses.

Put on gloves during the operation.

Clean the planes junta with the product

DECAPJOINT to dissolve the joint part
that has been stuck.

Apply the product to the part to be cleaned; wait
about ten minutes and then withdraw the residue with a
wooden spatula.

ATTENTION

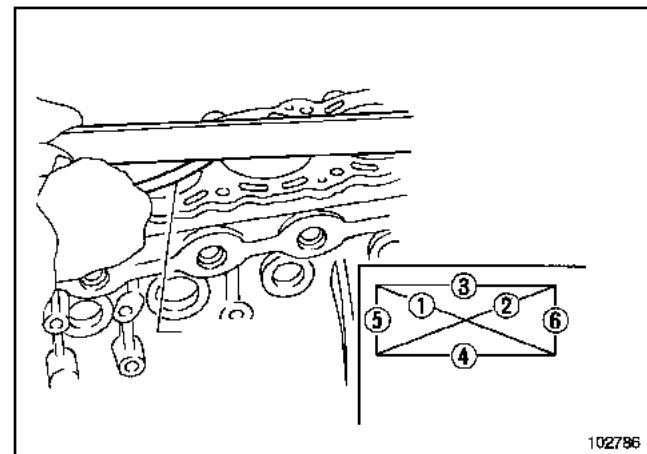
Do not drop product on the paintings.

Clean carefully to avoid entrycan foreign bodies in
the pipes ofbrought oil under pressure to the
stopshydraulic, camshafts, (pipeslocated both on
the engine block and on thecylinder head) and the
oil return pipe.

Failure to respect this instruction can lead to
clogging of the different intake ducts
of oil and provoke a deterioration fast of
motor.

3 - Checking the engine block

a - Checking the drawing of the engine block



102786

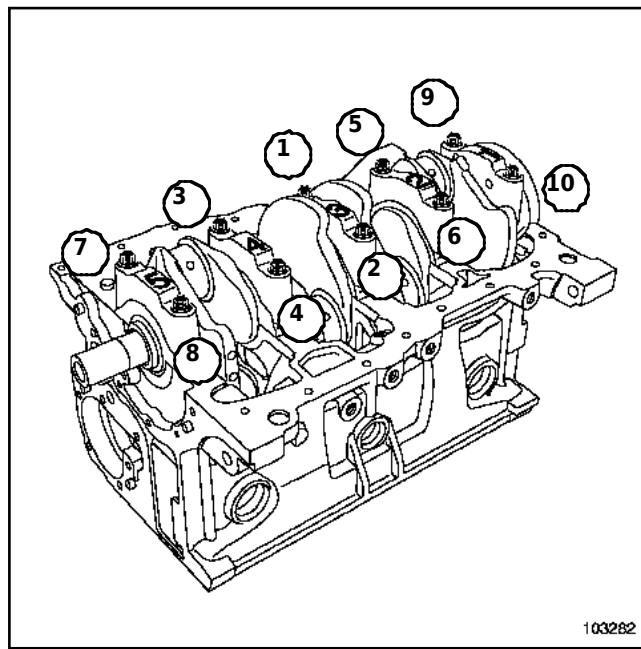
102786

Check with a ruler for cylinder head and a set of
cablethe deformation of the joint plane that must
not 0,03 mm

ATTENTION

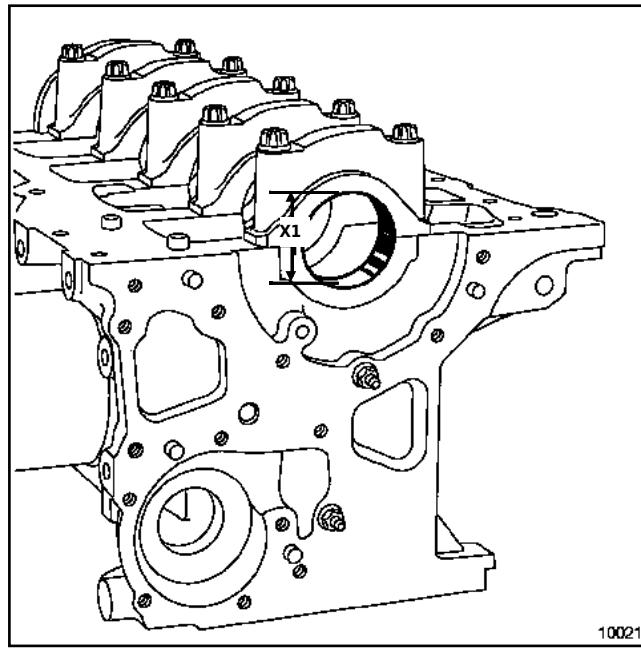
No rectifi cation of the block is allowed
motor.

**b - Measurement of the diameter of the crankshaft bearings
on the engine block**



Fit the crankshaft bearing caps so that the locating the cover **1** on the flywheel side.

Tighten in the order, torque and angle so the **Tor-**
crankshaft bearing cap nuts (2.5 daN.m
+ 47°)

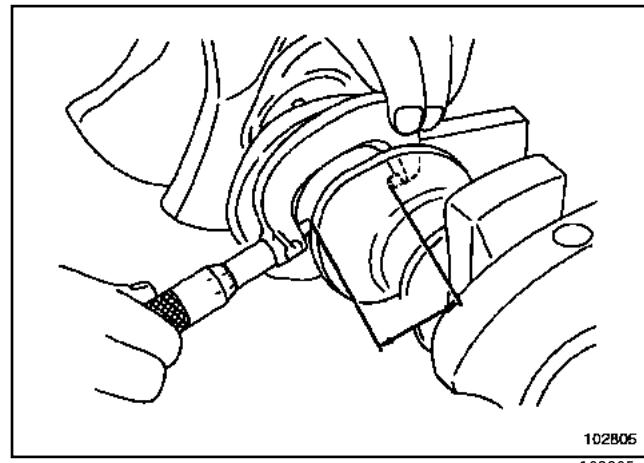


Measure the inside diameter of the crankshaft bearings(**X1**),
which should be **51.936 to 51.949 mm**.

Remove the crankshaft bearing caps.

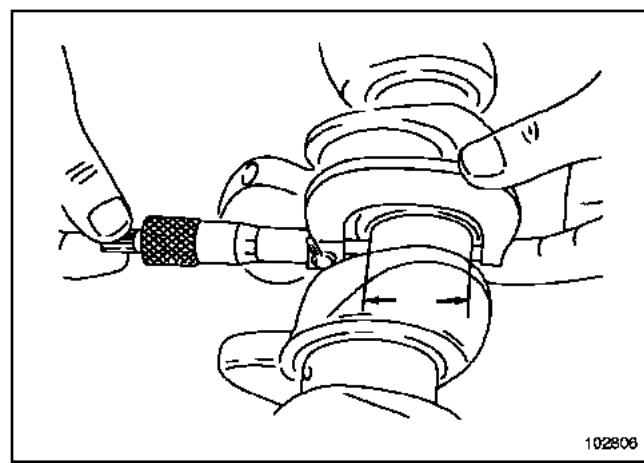
4 - Checking the crankshaft

a - Measurement of the diameter of the towers



The diameter of the towers must be within the
47,990 a 48,010 mm

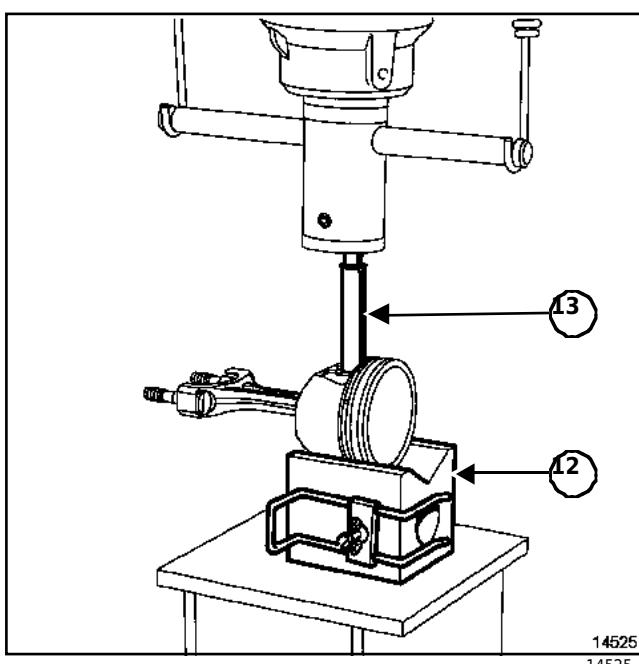
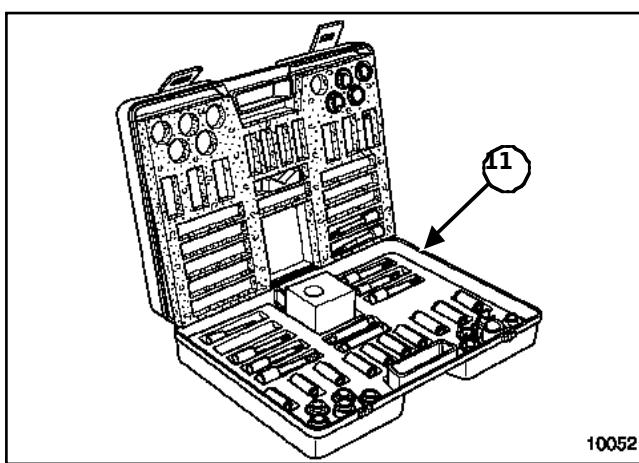
b - Measurement of the diameter of the crankpins



The diameter of the crank pins must be within the
43,960 a 43,980 mm

5 - Removal of the piston pins

Extract the segments with a segment
forceps.tos.



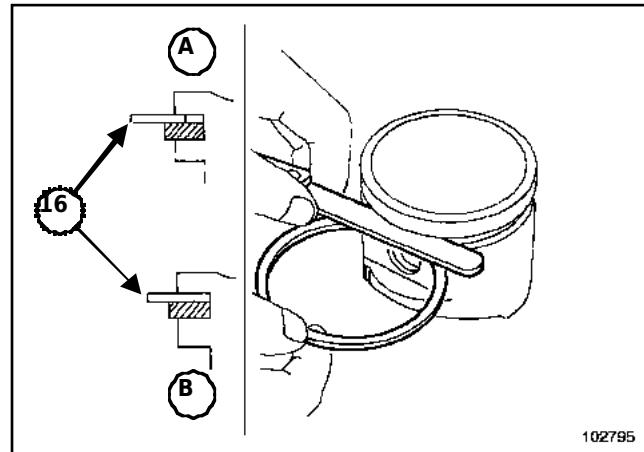
Place the connecting rod-piston assembly on the socket (**12**) of the tool (Mot. 574-22) (**11**).

Align the gudgeon pin with the outlet hole of the socket (**12**).

Push the gudgeon pin with the press and with the help of the extraction chuck (**13**) of the tool (Mot. 574-22).

6 - Checking the pistons and rings

a - Verification of the clearance between the throats of the piston and rings



A Incorrect position of the set of calas

B Correct position of the game calas

Measure the clearance between the piston grooves and these segments using a set of cleats (**16**).

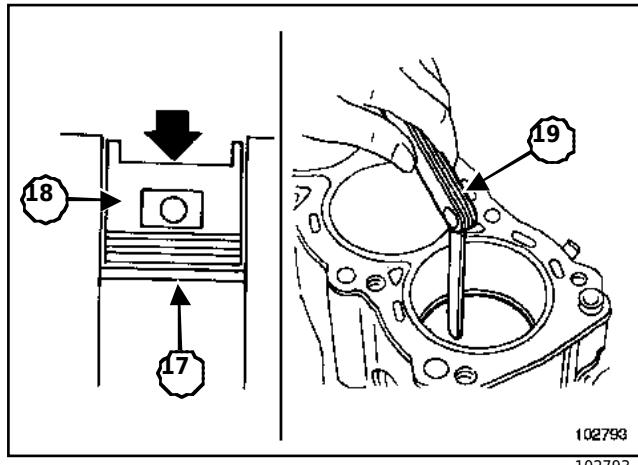
-the clearance for the fire segment must be **0,04 a 0,08 mm**

-the clearance for the sealing segment must be **0,025 a 0,07 mm**

-the clearance for the scraper segment must be **0,08 a 0,22 mm**

Replace the piston-pin assembly or the rings, if the value of the game is out of tolerance.

b - Verification of the game in the court of the segments



Put the segment (17) inside the cylinder.

Push the segment (17) to the center of the cylinder with the help of the piston (18).

Measure the clearance at the segment cut with a clearance cleat (19).

Clearance in segment cutting:

-for the fire segment the clearance must be **0, 15 to 0,30 mm** for K4M 760 and 761 engines, and
for the other motors the clearance must be **0,15 to 0,35 mm**

-for the sealing segment the clearance must be
0,4 a 0,6 mm

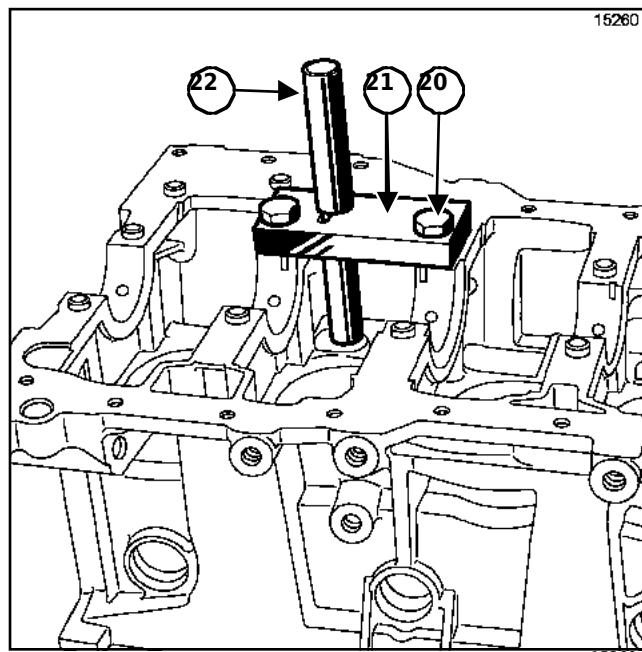
-for the scraper segment the clearance must be **0, 2 a 0,9 mm**

Replace the segments. If the value of the game is out of tolerance and if the value of the game remains out of tolerance with the new segments, replace the engine block.

II - ASSEMBLY OF THE UNDER ENGINE

1 - Replacement of the refrigeration jets bottom of piston

a - Assembling the nozzles of cylinders 1 and 3



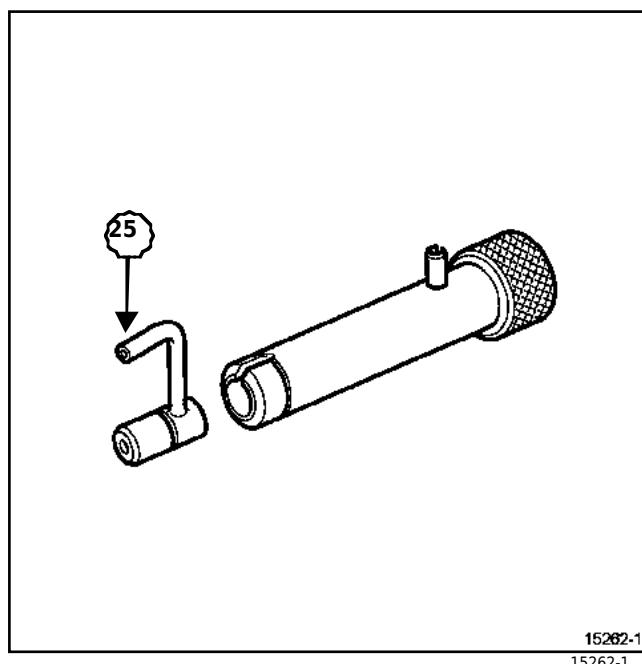
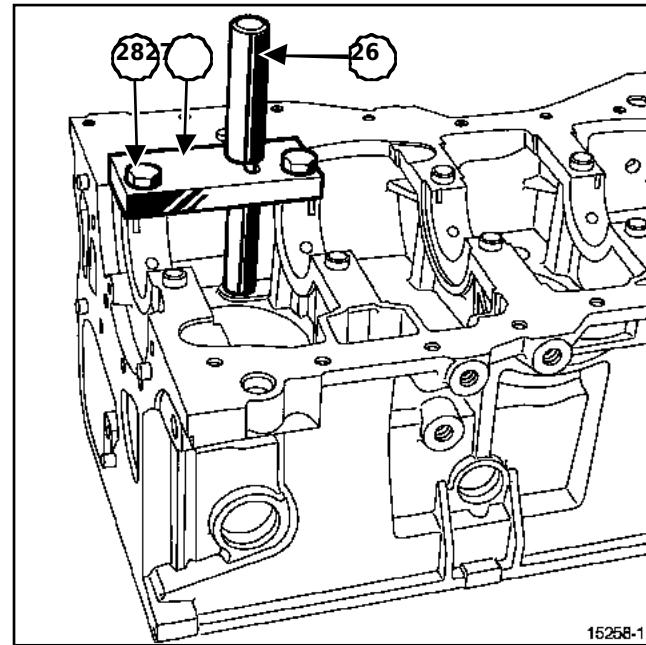
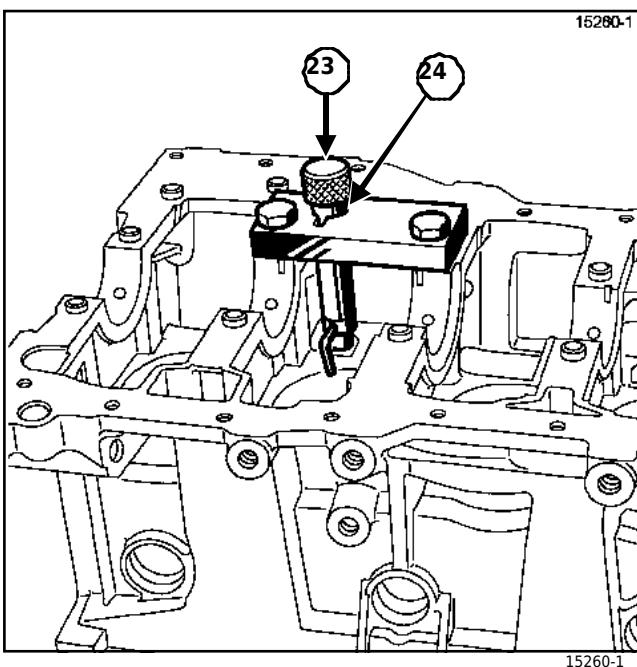
Place the plate (21) of the tool (Mot. 1494) without locking the two screws (20).

Put the guide rod (22) in the plate (21) (the end of the guide rod should be positioned in the hole of the jet), to be able to center the plate.

Tighten the two screws (20).

Remove the guide rod (22).

b - Assembling the nozzles for cylinders 2 and 4



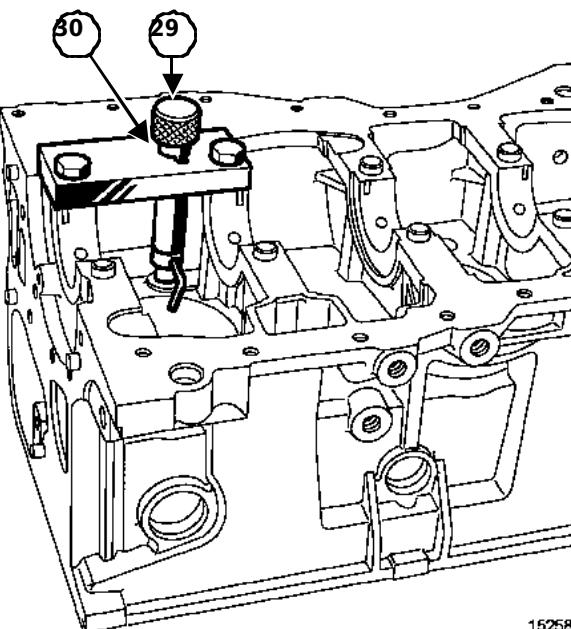
Place the push rod (**23**) in place of the rodguide.

Insert the jet into the push rod.

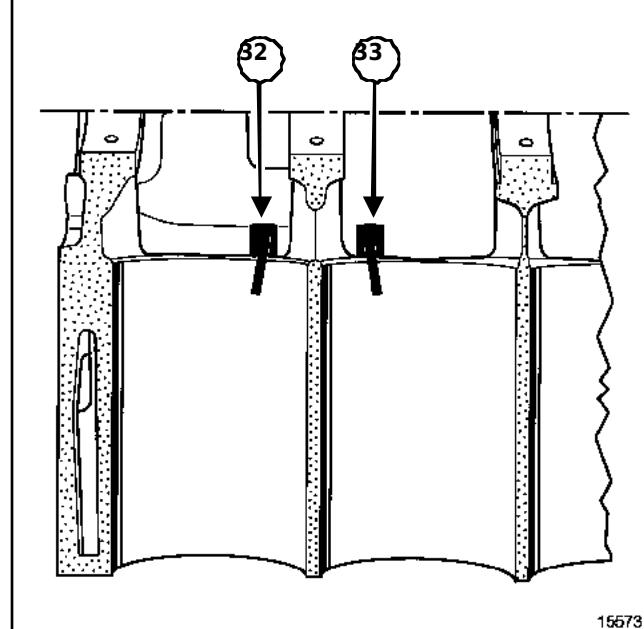
ATTENTION

Attention to the orientation of the spout, the endof the jet (**25**) must be directed towards the centercylinder.

Hit the rod with the aid of a hammer.push until contact of the projection (**24**) of the rodthrust with the plate.



15258



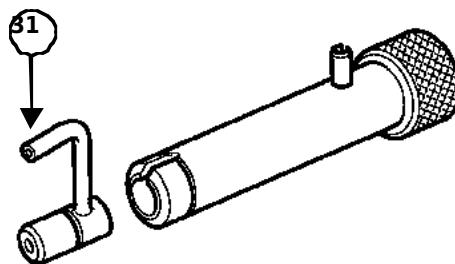
15573

Check that the bottom cooling jets are
the piston are oriented properly. The brand (32)
corresponds to the jets of cylinders 2 and 4, and the mark
(33) corresponds to the dispensers of the Cylinders 1
and 3.

2 - Replacement of the crankshaft bearings

a - Determine the position of the bearings of the towers

To determine the position of the bearings of the
towers (Chapter Engine and underslung assembly)
tor, Engine underbody: Characteristics,
page 10A-
15



15262-1

Put the push rod (29) in place of the
rodguide.

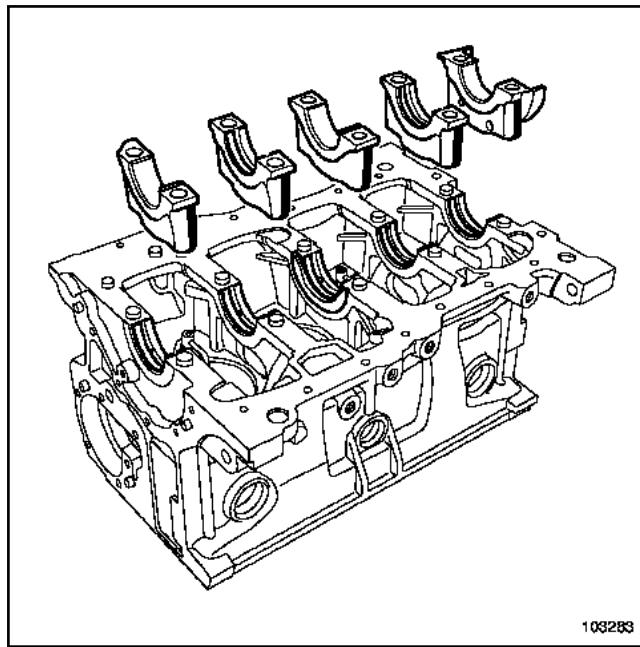
Insert the jet into the push rod.

ATTENTION

Attention to the orientation of the spout, the end of
the jet (31) must be directed towards the
center cylinder.

Hit the rod with the aid of a hammer, push until contact
of the projection (30) of the rod thrust with the plate.

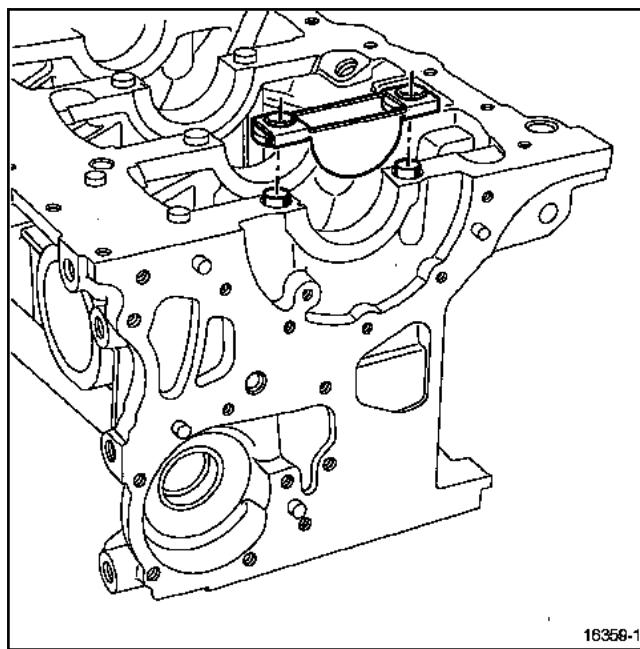
**b - Direction of assembly of the bearings
of the towers**



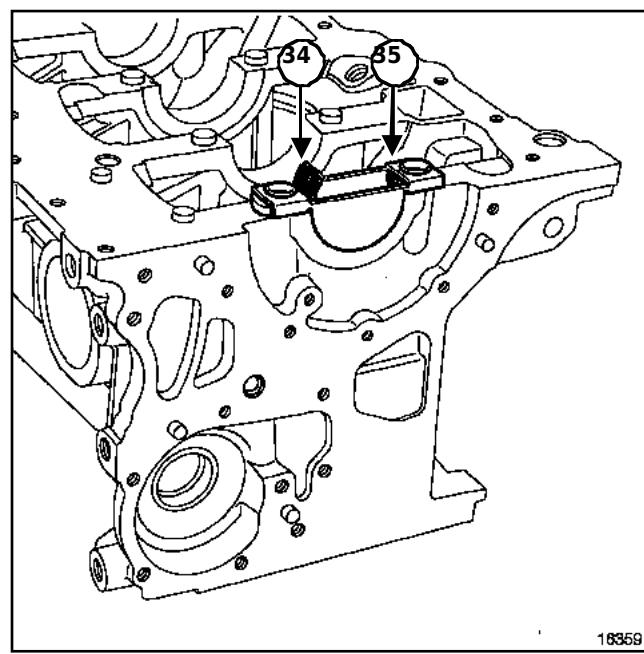
Put in the engine block, put the grooved bearings on all crankshaft bearings of the blockmotor.

Put on the crankshaft bearings, put the bearings-slotted tees in bearing caps 2 - 4 and non-grooved bearings in the bearing caps supports 1 - 3 - 5.

c - Placing the bearings in the engine block



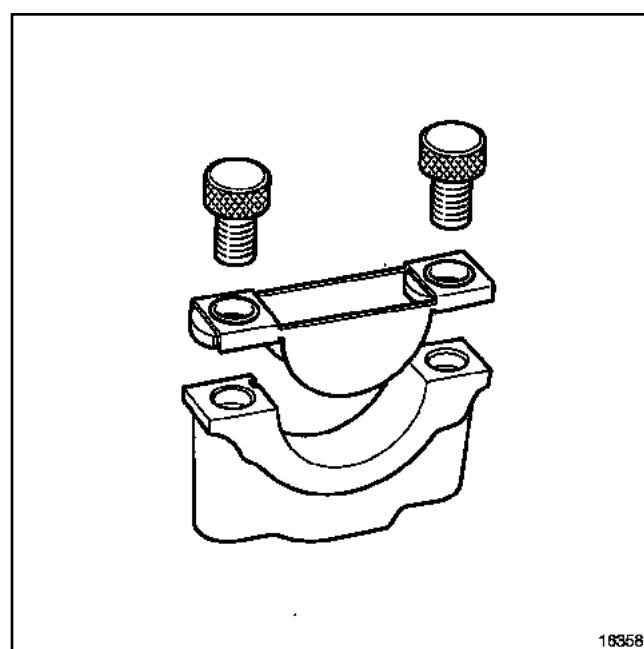
Fit the tool (Mot. 1493-01) on the engine block.



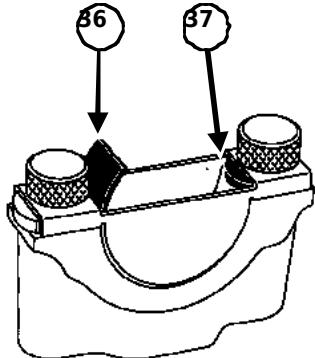
Fit the bearing in tool (Mot. 1493-01).

Press on (34) until the cushion is in contact with the tab (35).

**d - Placing the bearings in the caps
of supports**



Fit the tool (Mot. 1493-01) into the support.



16357
16357

Fit the bearing in tool (Mot. 1493-01).

Press on (36) until the cushion is in contact with the tab (37).

3 - Verification of the diametrical clearance of the turrets

NOTE:

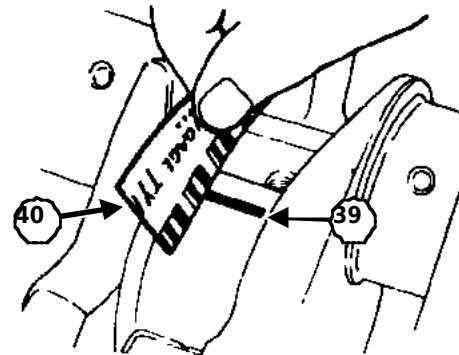
The crankshaft should never be rotated during operation.

Remove any oil that may be in the torque crankshaft bearings and bearings.

Put:

-the crankshaft,

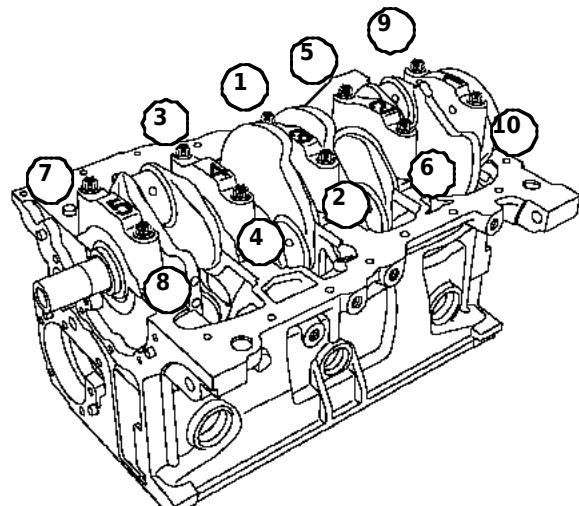
-The lateral crankshaft cleats on support 3 (the crankshaft side grooves).



102807
102807

Cut pieces of wire to measure play (39).

Put the cable on the axis of the crankshaft towers (avoiding the greasing holes of the supports).



103282
103282

Fit the crankshaft bearing caps so that the locating the cover 1 on the flywheel side.

Tighten in the order, torque and angle so the Tor-crankshaft bearing cap nuts(2.5 daN.m + 47°)

Remove the crankshaft bearing caps and the crankshaft.

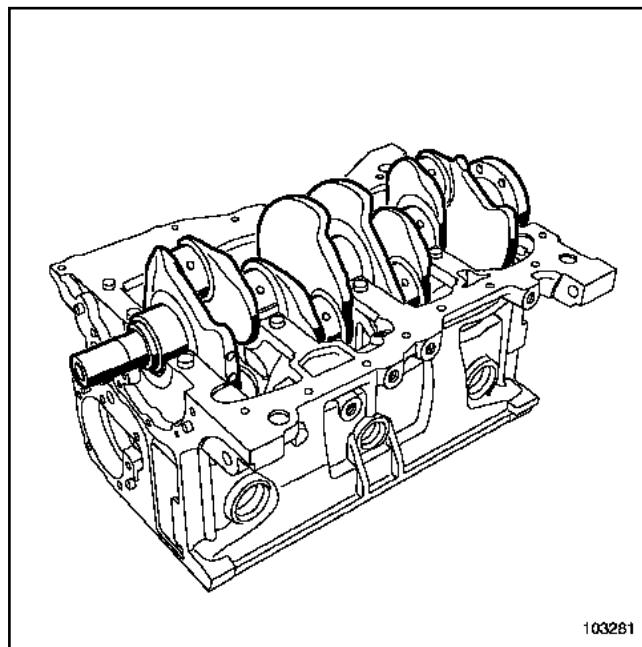
Measure the flattening of the measuring cable of the go using the packaging paper (40) .

Check the value of the game, which should be from **0.027 to 0,054 mm**

Clean the traces of the measuring wire on the crankshaft and in the bearings.

4 - Checking the crankshaft side play

Oil the crankshaft bearings (only the face that is in contact with the crankshaft).



Fit the crankshaft.

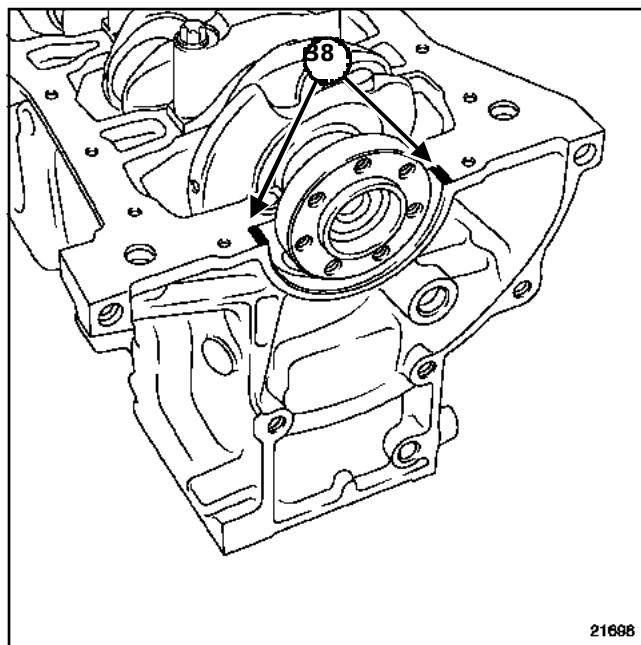
Check the presence of the side shims of the cylinder shaft in support 3 (the grooves on the crankshaft side).

NOTE:

The gasket planes of the engine block and the support strap number 1 must be clean, dry and grease-free (avoid fingerprints).

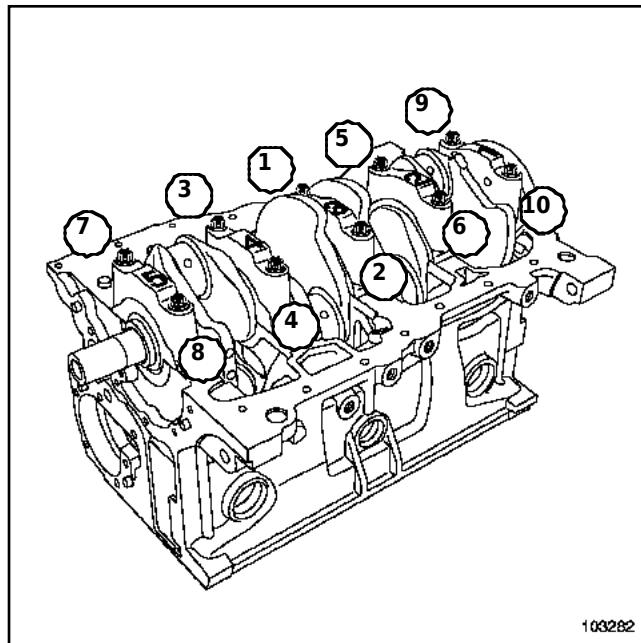
NOTE:

An excess of sealing product in the application cation may cause an overflow of said product during the tightening of the parts. The product-fluid mixture can cause a degradation of some elements (engine, radiator aches, ...).



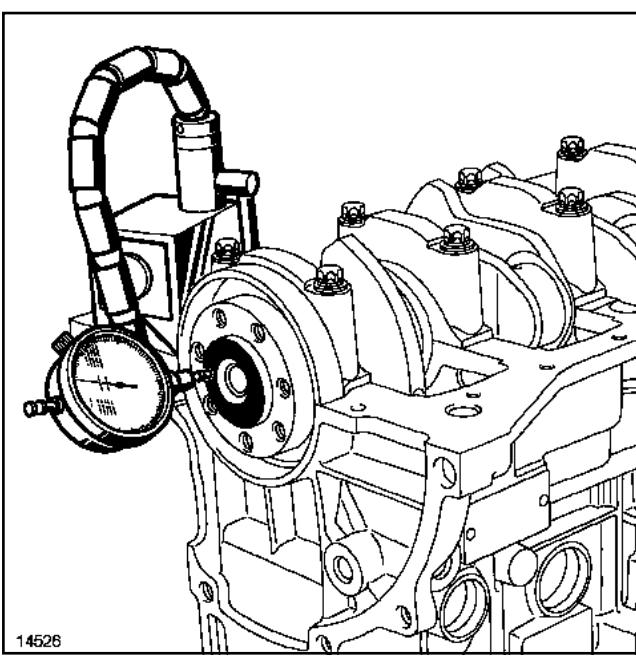
21698 Attach two cords (**38**) of

RHODORSEAL 5661



Fit the crankshaft bearing caps so that the locating the cover **1** on the flywheel side.

Tighten in the order, torque and angle so the **Tor-crankshaft bearing cap nuts**
($2.5 \text{ daN.m} + 47^\circ \pm\pm\pm 5^\circ$).



14526

14526

Check the lateral play of the crankshaft, which must be
from:

-no wear on the side **shims 0.045 to 0.252**

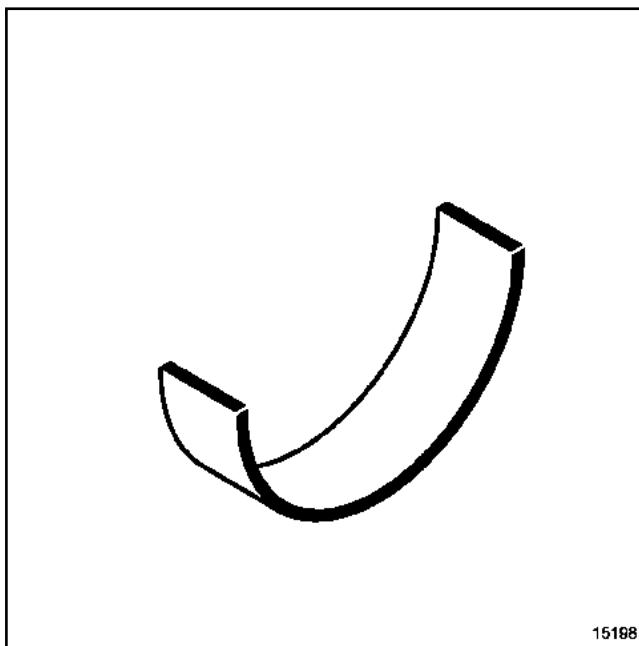
mm

-with wear of the lateral **cleats 0.045 to 0.852**

mm

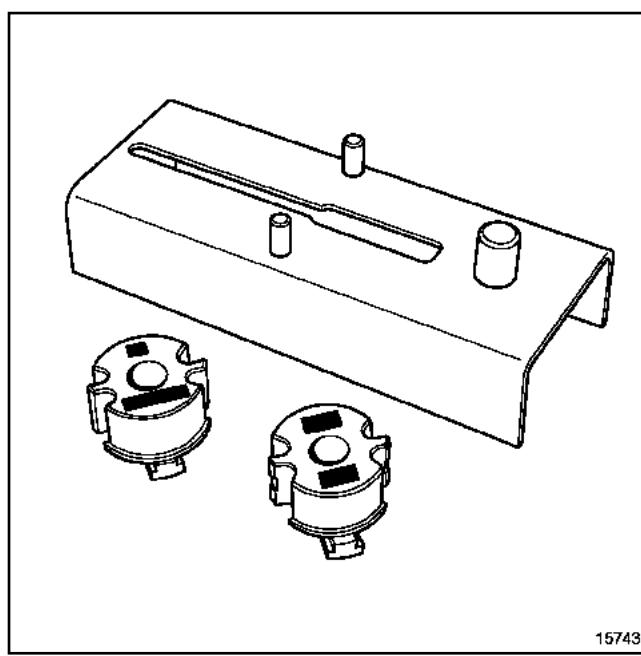
Check that the crankshaft rotates freely and without
pointLasted.

5 - Replacement of the connecting rod bearings



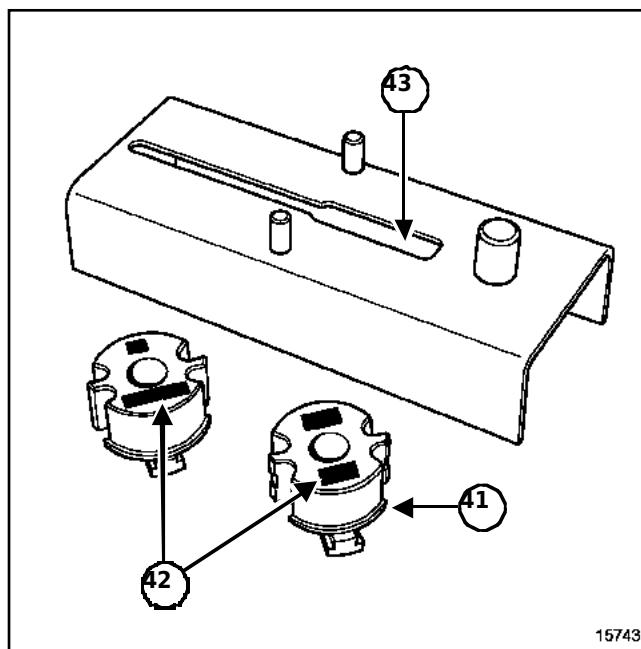
15198

The motor is equipped with bearings without
position-ache.



15743

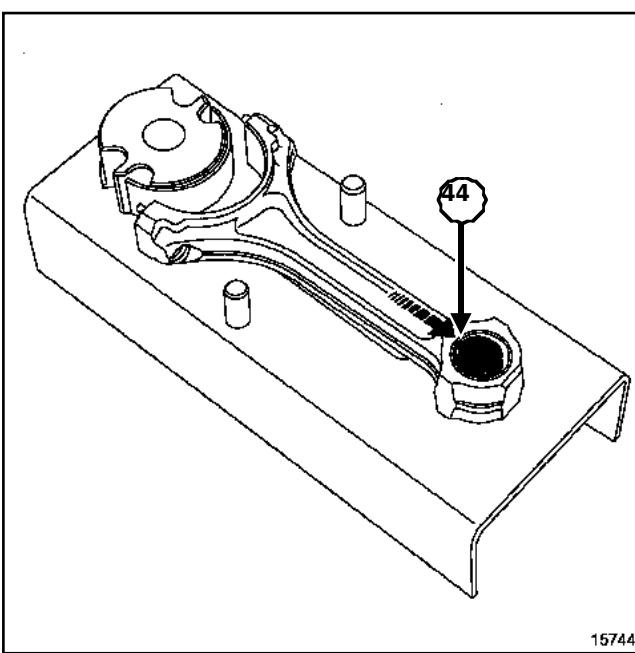
The positioning of the bearings is carried out by means of the
util (Mot. 1492).



15743

Choose the bearing bracket (41)
corresponding to the motor (motor type marking (42)
on the bracket).

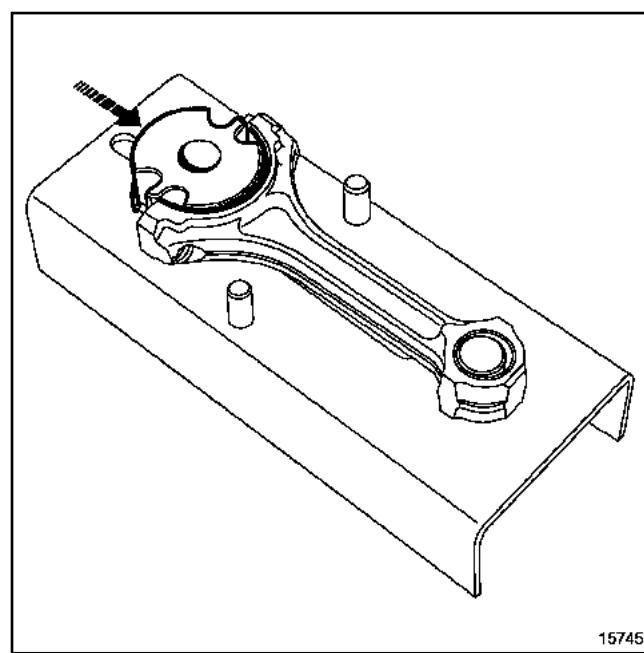
Slide the bearing bracket into the groove (43) of
the plinth.



15744
15744

Place the connecting rod on the socket.

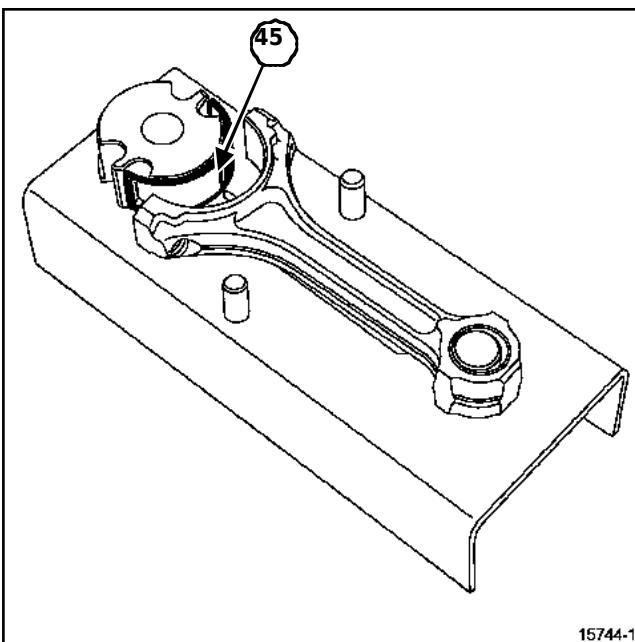
Rest the lower part (44) of the small end on the centering pawn.



15745
15745

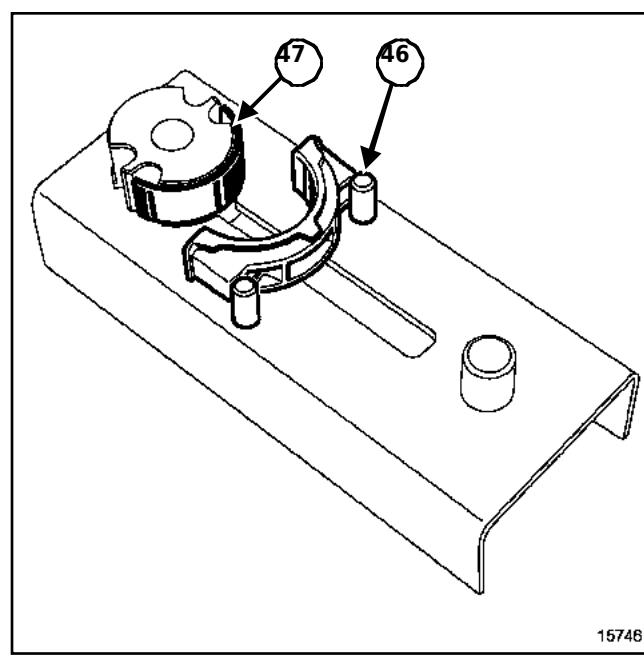
Push the bearing bracket (clockwise arrow) until the bearing bracket is fully in the bottom of the connecting rod body.

Remove the support from the crank body and proceed in the same way for the other connecting rods.



15744-1

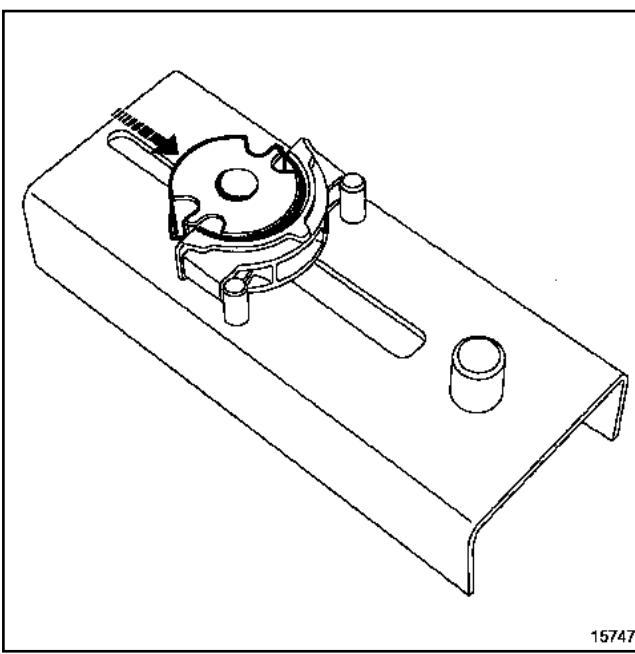
15744-1 Place bearing (45) in bearing bracket.



15746
15746

Support the connecting rod cap on the pins (46) of the socket.

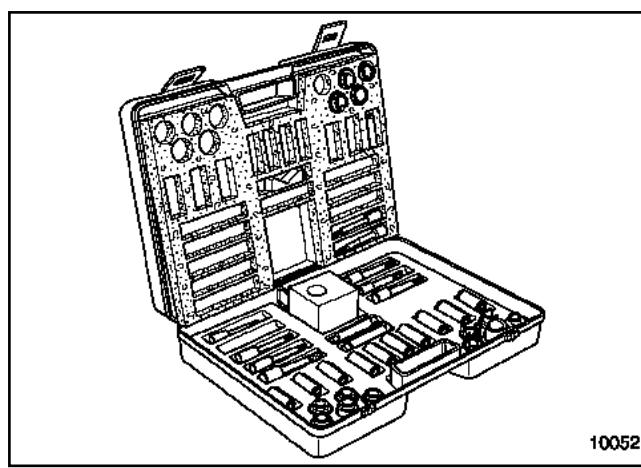
Place the connecting rod bearing (47) in the support of the horse rider.



Push the bearing bracket (clockwise)arrow until the bearing bracket is fully in thethe bottom of the big end cap.

Remove the support from the connecting rod cap and proceedin the same way for the other bonnets.the.

6 - Assembling connecting rods - pistons



The piston pins are fitted tight inconnecting rods and turning on the pistons. Use the ma-

Latin (Mot. 574-22) and the tool (Mot. 574-24).

a - Preparation of the connecting rods

Visually check:

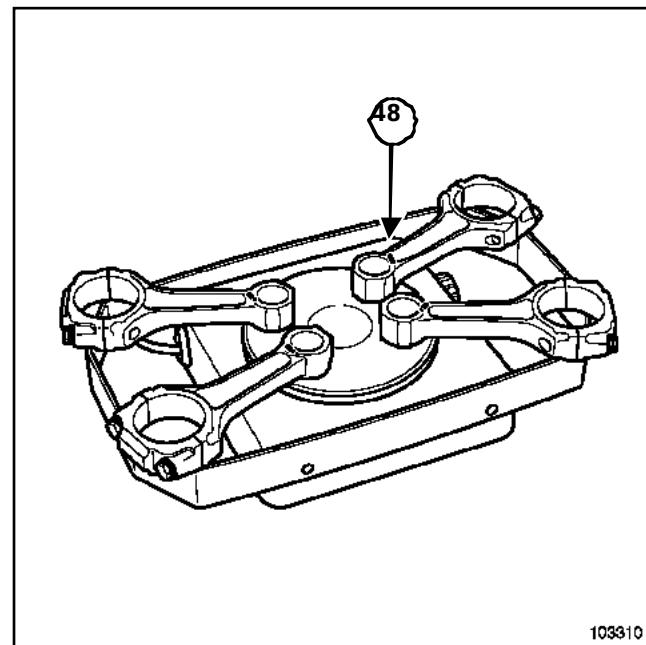
-The state of the connecting rods (deformation and false squa-drag),

-Cleaning the support surfaces between thecap and connecting rod body.

Using a calefactante plate **1500 W** of poten-cia.

Place the connecting rod feet on the heating plate.

Check that the entire surface of the small end of the connecting rod is in contact with the plate.



On each connecting rod foot, place (as a temperature control perature) a piece of self-etching soldertin in (**48**) and whose melting point is approximately about **250°C** .

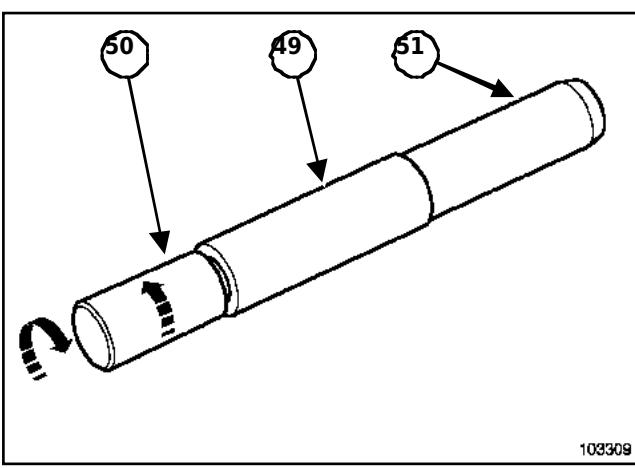
Heat the connecting rod foot until the core meltsof self-etching welding.

b - Preparation of the piston pins

Check that the piston pins slide freely.the corresponding new pistons.

Use centering **device C13** and mounting shaft **A13** of thecase (Mot. 574-22) for piston pins withouthighlight.

Or use centering device C13 and mounting shaft **A13-01** with highlight.



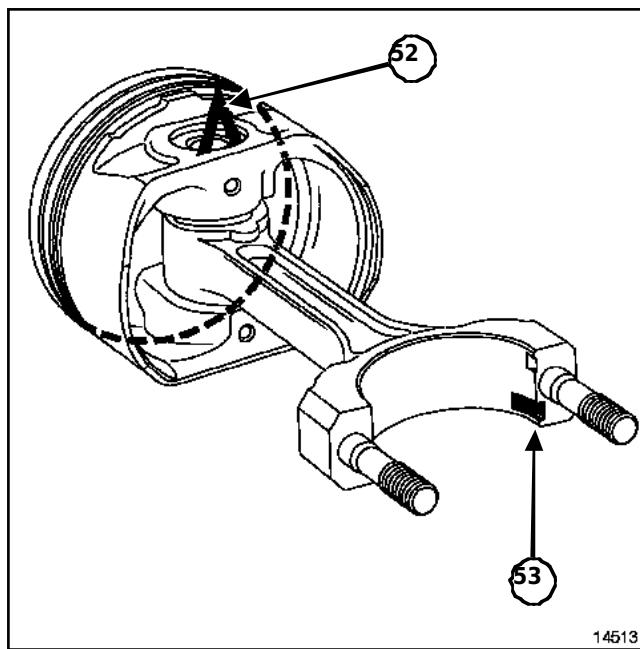
Fit the piston pin (49) on the mounting shaft 50

Screw in the centering device (51) until the con-together.

Loosen up a quarter turn the mounting shaft (50).

c - Positioning of the pistons with respect to the connecting rods

The pistons are identified by a "V" stamped on the their heads and indicating the side of the flywheel.



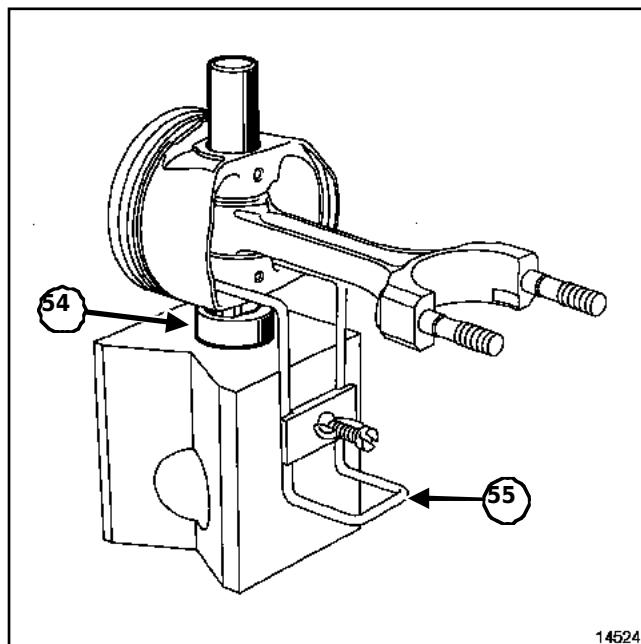
Put the "V" (52) engraved on the piston head until dia up.

Put the bearing retaining lug (53) out of the connecting rod down.

d - To assemble the piston and the connecting rod, you must respect the following instructions:

IMPORTANT

During this operation, use insulated gloves thermal lamination.



Place the bushing (54) B10 and the piston ring on the ton resting on the bushing (oriented in the direction Right). The assembly is fixed with the fork (55).

Check that the piston pin hole is flush with the hole in bushing B10 .

Oil the centering device and the piston pin with oilmotor.

Insert the gudgeon pin into the mounting to seerify that it glides freely and, if necessary, vol-see centering the piston.

The following operations must be carried out quickly carefully to avoid wasting heat.

When the piece of solder reaches the melting point transformation into drop):

-clean the solder drop,

-insert the centering device into the piston,

-place the connecting rod (correctly positioned) in the piston,

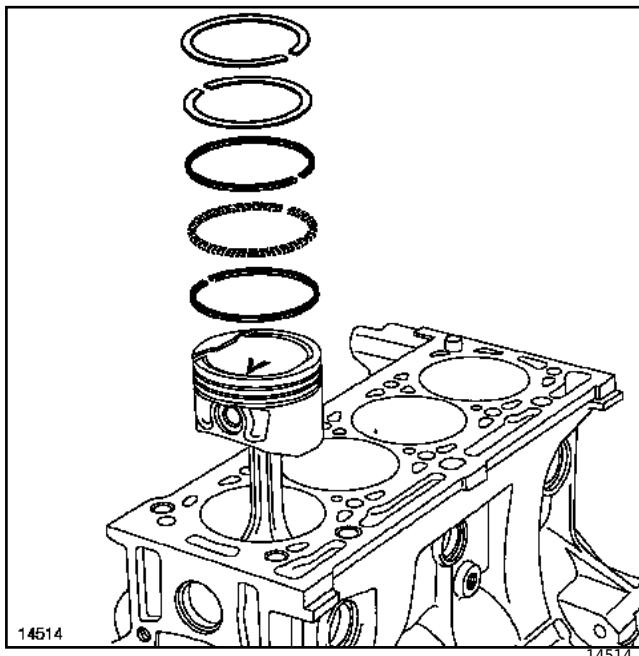
-Rapidly insert the piston pin until that the centering device stops at the bottom of the plinth medium.

Check that the piston pin is inserted inside of the piston diameter for all positions of connecting rod on piston.

7 - Replacement of the segments

The segments, adjusted from origin, must be given free inside their throats.

Respect the direction of assembly of the segments, the TOP up.



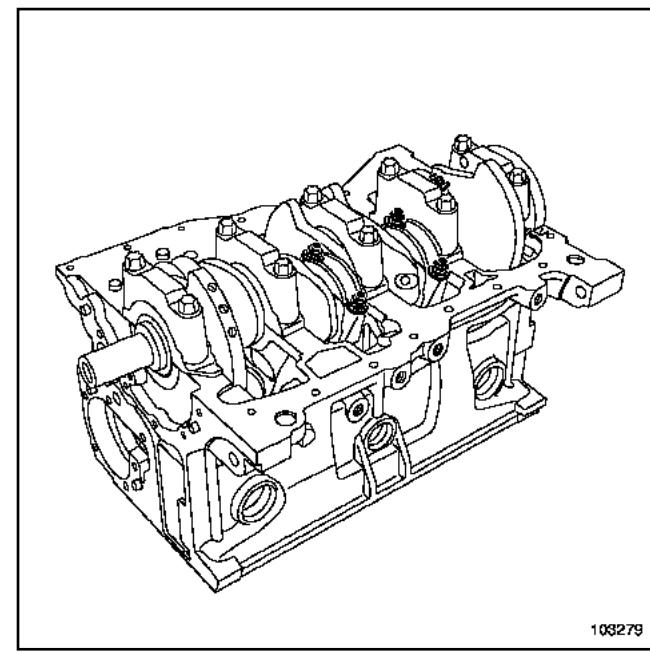
Respect the orientation of the game in the cut of each segment.

8 - Replacement of the engine underbody

Lubricate the upper part of the cylinders with engine oil, cylinders and crankshaft journals.

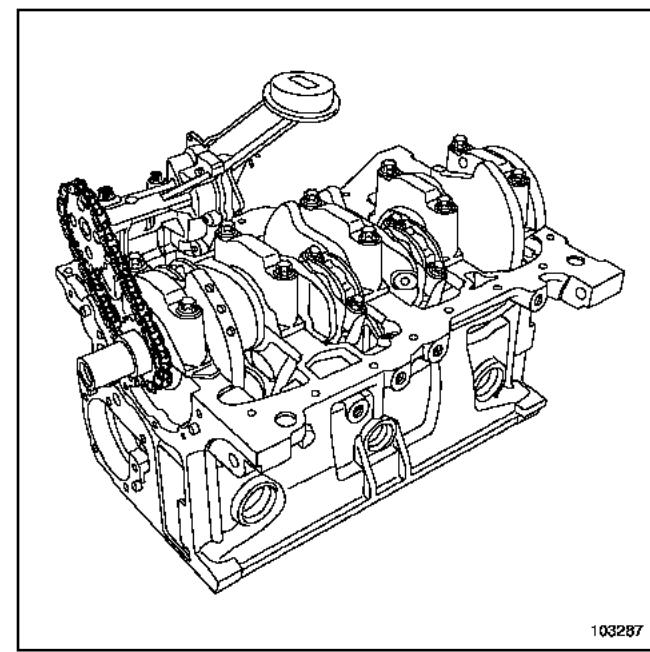
Fit the "connecting rods - piston" assemblies using the **Piston mounting bushing with rings** on the shirflywheel), and respecting the matching pis-tones - cylinders.

Fit the connecting rods on the crankshaft journals.



Fit the connecting rod caps.

Tighten the locknuts to torque and angularly.
connecting rod caps (2 daN.m + 45° ±±± 6°).



Put:

- the oil pump drive pinion,
- the oil pump chain,
- the oil pump.

Tighten the oil pump bolts to torque
(2.5 daN.m) .

The sealing of the closing casing can be done either with a gasket or with **LOCTITE 518**.

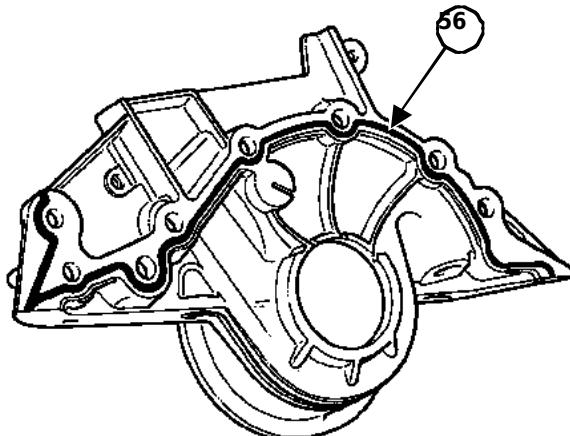
NOTE:

The joint drawings of the engine block and the car-crankshaft sealing ring must be clean, dry and grease-free (avoid fingerprints).

NOTE:

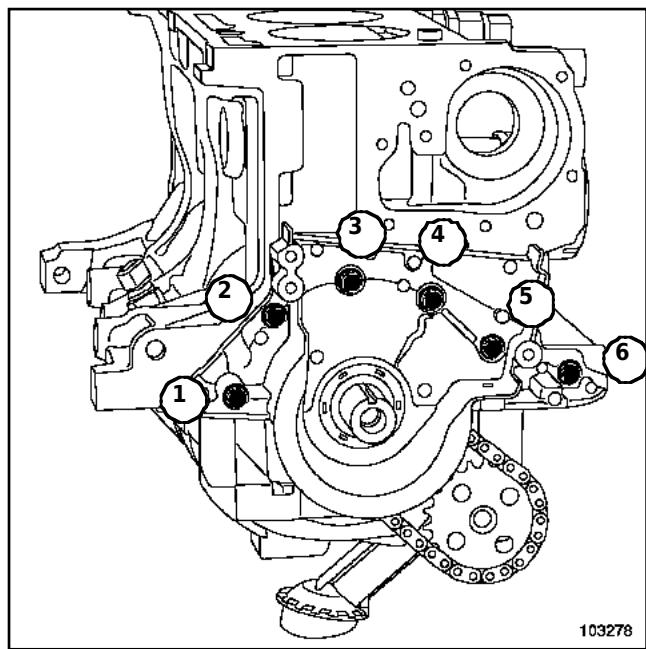
An excess of sealing product in the application cation may cause an overflow of said product during the tightening of the parts.

The product-fluid mixture can cause a degradation of some elements (engine, radiatorache, ...).



10061
10061

If the seal of the crankshaft closing plate performed with **LOCTITE 518**, the bead (56) must have ner a width of **1 mm** and apply according to the drawing.



103278
103278

Fit the crankshaft closing cover.

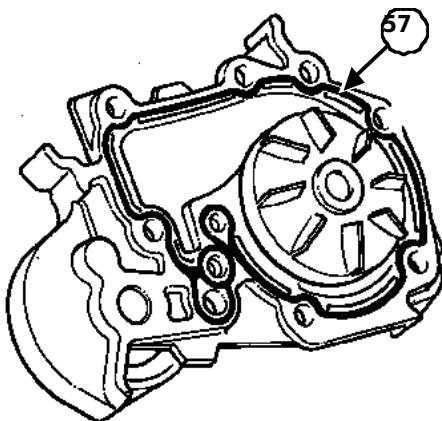
**Tighten the crankcase bolts in order and to torque
crankshaft seal (1,2 daN.m) .**

NOTE:

The plans of joints of block motor and the water pump must be clean, dry and without grease (avoid fingerprints).

NOTE:

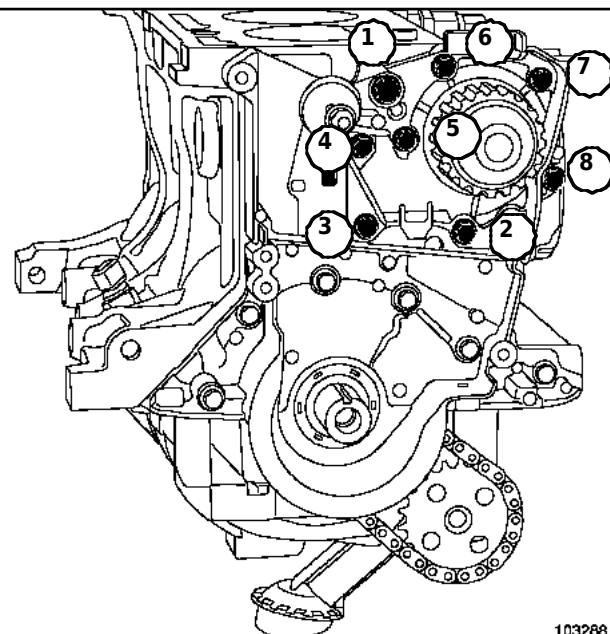
An excess of sealing product in the applicationcation may cause an overflow of said product during the tightening of the parts. The product-fluid mixture can cause a degradation of some elements (engine, radiatorache, ...).



10063

The water pump is sealed with

LOCTITE 518, the bead (57) must have a width
of **1 mm** and applied according to the drawing.



103288
103288

Fit the water pump.

NOTE:

Put one or two drops of **LOCTITE**
FRENE-TANCHWater.

Tighten in order and to torque:

-the screws **M6 water pump** (1,1
and N.m) ,

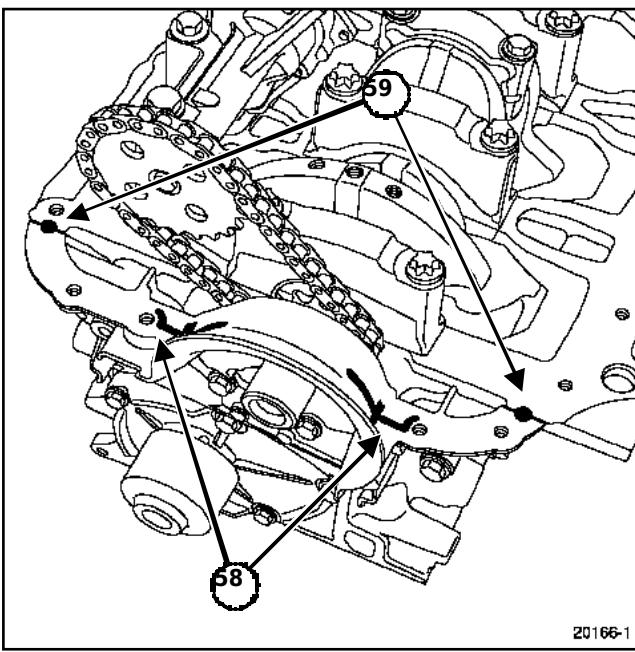
-the **M8 screw of the water pump** (2.2 daN.m) .

NOTE:

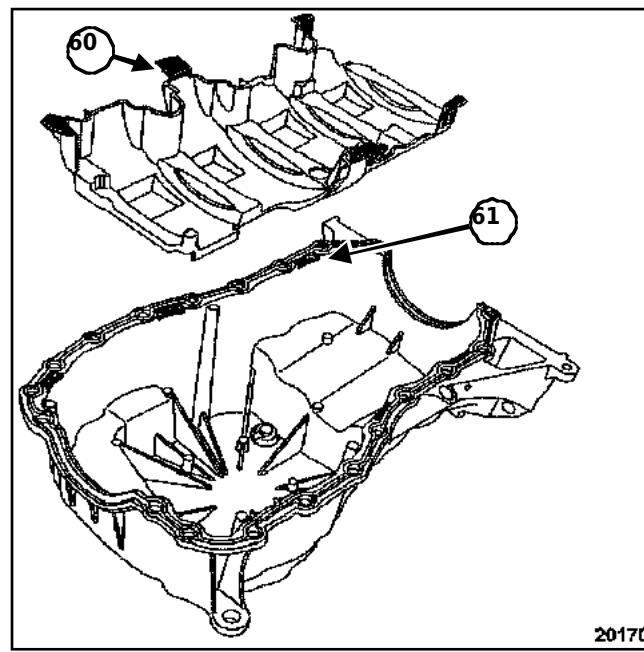
The gasket planes of the engine block, of the crankshaft support sleeve 1 and the closure housing crankshaft must be clean, dry and without grease (avoid fingerprints).

NOTE:

An excess of sealing product in the application can may cause an overflow of said product during the tightening of the parts. The product-fluid mixture can cause degradation of some elements (engine, radiator, ...).



20166-1
20166

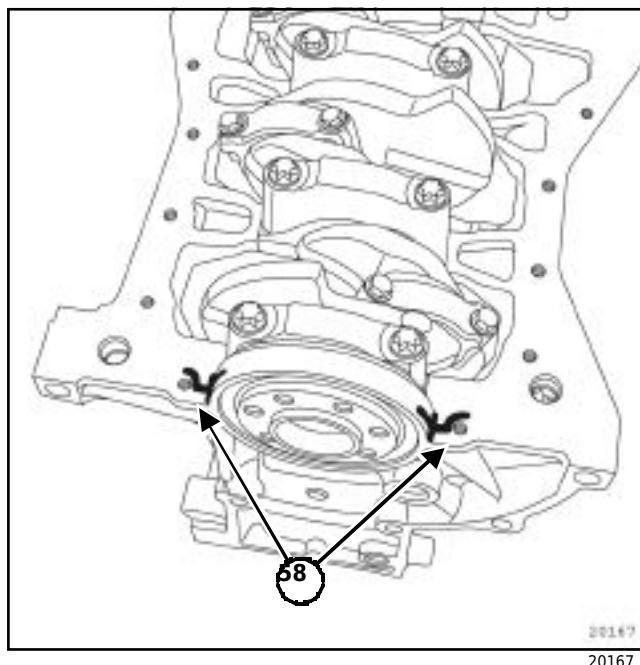


20170
20170

During the replacement of the lower oil pan, check
confirm that:

-the tabs (**60**) of the anti-emulsion plate are correctly
positioned in the notches (**61**),

-There is a correct alignment of the engine block and from the
lower oil pan, flywheel side, within order to avoid
deformation of the clutch housing/gue when assembling it
with the gearbox.

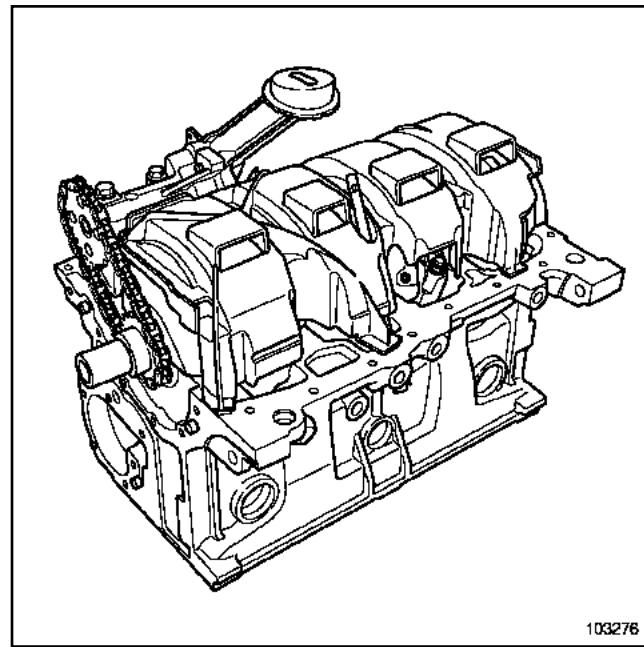


20167

Put:

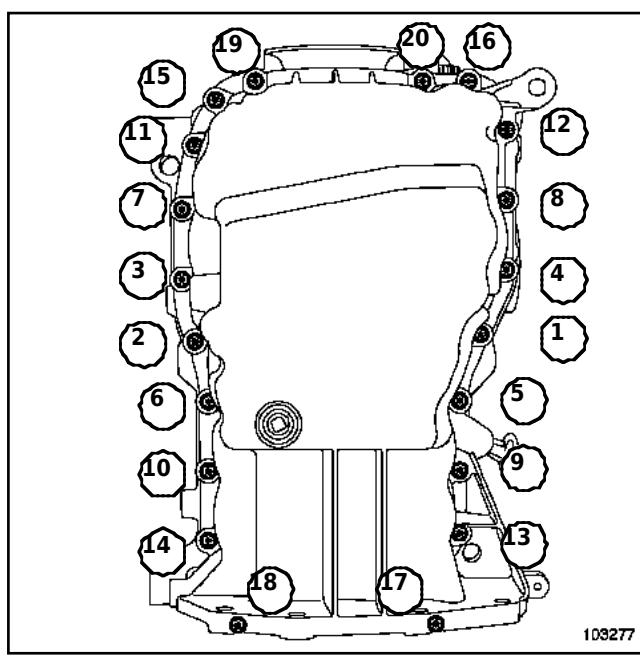
-four strands (**58**) of **RHODORSEAL 5661** of a
diameter of **5 mm**,

-two points (**59**) of **RHODORSEAL 5661** of a day-**7 mm**
meter at the intersection of the crankcase/re of the
crankshaft and engine block.



103276
103276

Place the anti-emulsion plate.



103277

Fit the lower case equipped with a gasket new.

Tighten in order and pairs:

-the lower casing bolts **0.8 daNm**,

-the **lower oil sump bolts** (1,4
and N.m).

Fit the oil level probe.

**Tighten the oil level probe to torque (2
and N.m)**.

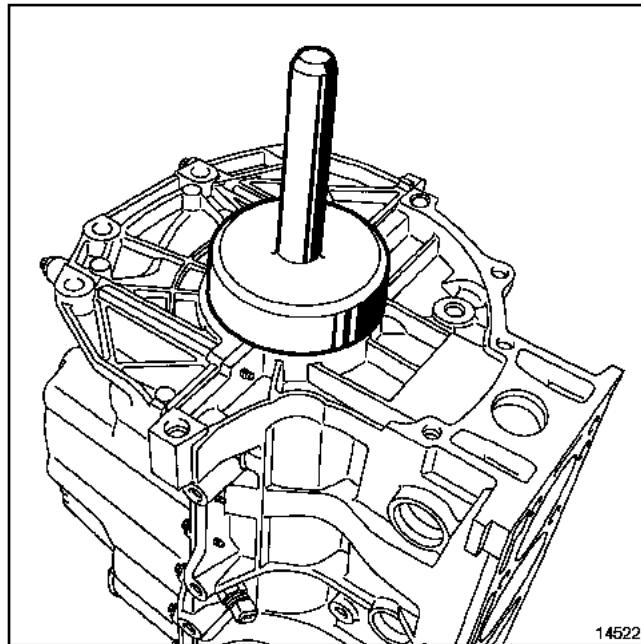
Fit the knock sensor.

Tighten the **knock sensor to torque (2 daNm)**.

Fit the oil pressure sensor.

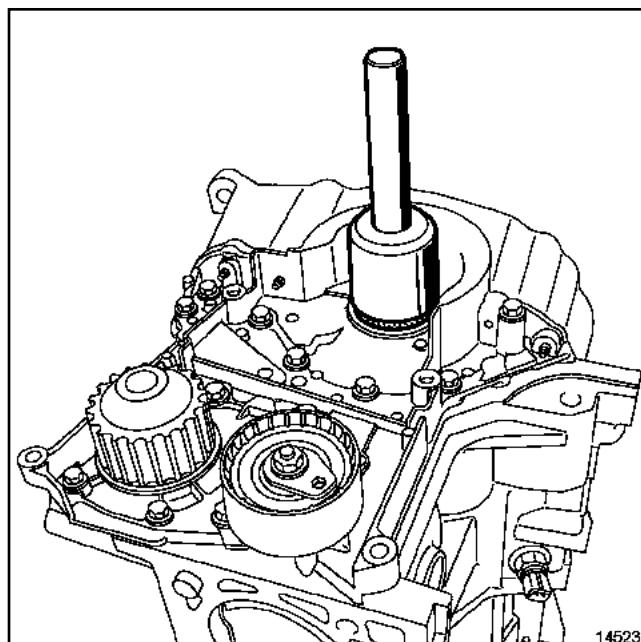
Torque tighten the **oil pressure sensor (3,
2 and N.m)**.

**9 - Reposition of the watertight joints of
the crankshaft**



14522
14522

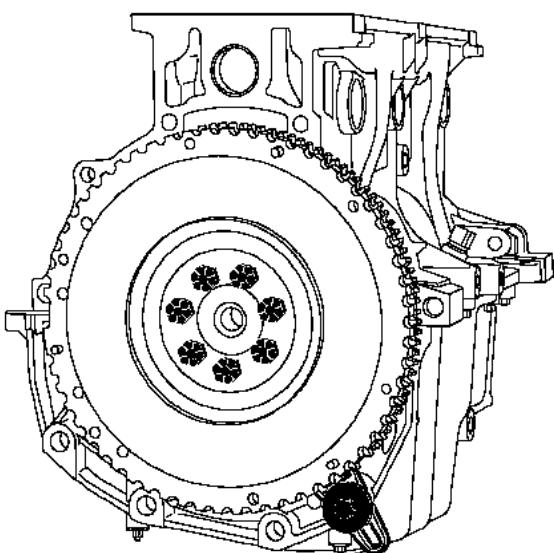
Fit the crankshaft seal on the vo-
front engine using tool (Mot. 1129-01).



14523

Fit the crankshaft seal by means
of using the tool (Mot. 1385).

10 - Replacement of the engine underbody



103284

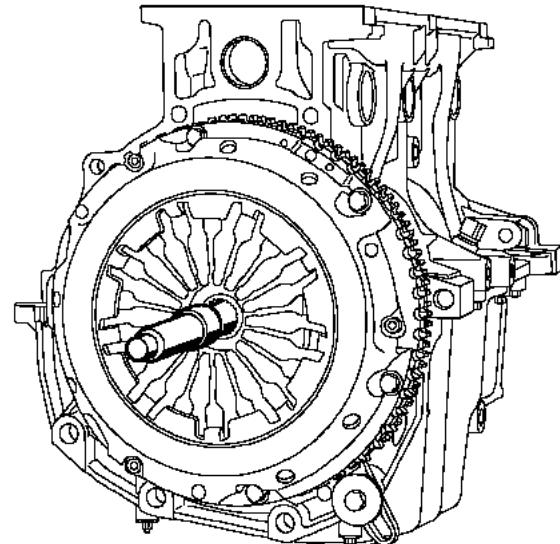
Refit the flywheel fitted with new bolts
your.

Refit the flywheel lock (Mot. 582-
01) o (Mot. 1677).

**Tighten the flywheel bolts to torque
daN.m)** (star tightening). (5,5

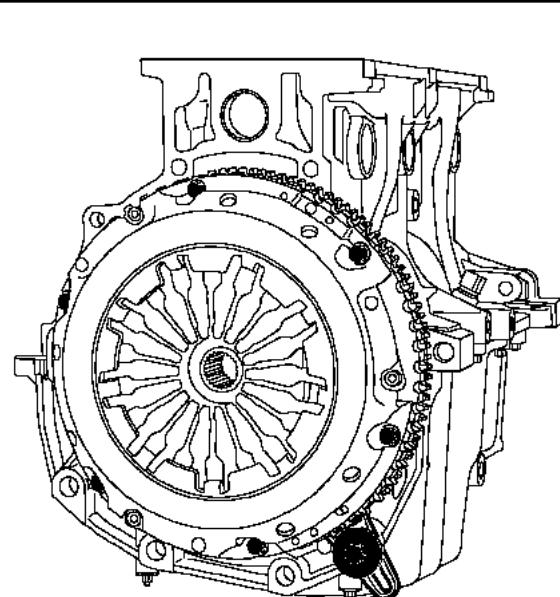
Put:

- the clutch disc,
- the clutch mechanism.



103285

Center the clutch disc using tool (Emb.
1518).



103286

**Tighten the throttle mechanism bolts to torque.
brague (0.8 daN.m) .**

Remove the flywheel lock.

ENGINE AND LOWER ENGINE ASSEMBLY

Timing - cylinder head: Refit

10A

K4M

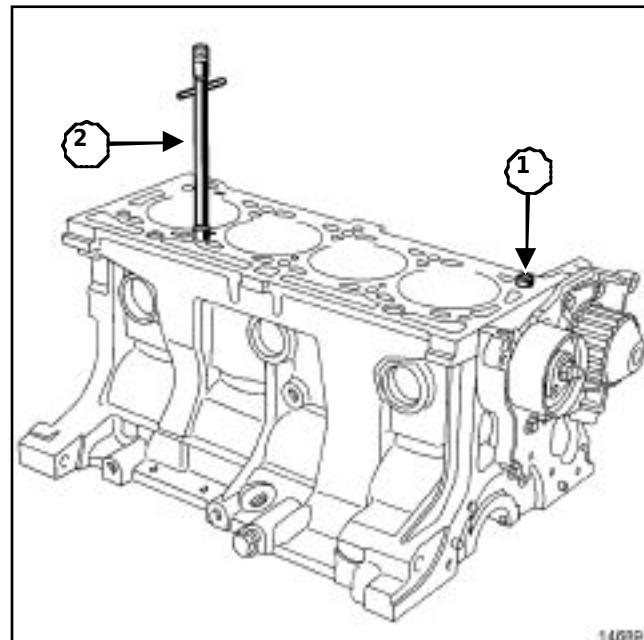
Essential specialized tooling	
Against. 104	Feet for centering gasket and cylinder head
Against. 1669	Mounting the pusher backlash
Against. 1503	Useful for put the cap pickup butt
He. 1382	Key case from spark plugs 16 & 21 mm pair 1,75 & 2,8 daN.m + square adapter 9-9,52 for wrench He. 1086
Against. 1632	Useful for put the camshaft gasket
Against. 1496	Useful for setting the Camshafts
Against. 1489	Peg of setting top dead center
Against. 1490-01	Blocking and draft of the pulleys of the trees cam them
Against. 799-01	Immobilizer from the pinions for correia jagged from distribution
Against. 1487	Useful for replacement of tree tops levas (diameter 57 mm)
Against. 1488	Useful for replacement of tree tops levas (diameter 43 mm)

Tightening torques m	
screw from blocking the pusher square	1.5 daN.m
screws new of oil decanter in the holes through which no I know he has last the tap	1.5 daN.m
new or ori-decanter gene oil in the holes for the that I know he has last the macho from thread	1 daN.m
solenoid valve screw vula del desfasador delcamshaft	1 daN.m
plugs	2.5 a 3 andN.m
coil screws ignition	1.5 daN.m
pickup screw identification from cila-over	1 daN.m
screws of delivery man of admission	0.9 daN.m
roller screw wind-distribution lator	4.5 daN.m
tensioner roller nut of distribution	2.7 daN.m
screw the pulley crankshaft accessories	4 daN.m + 115° 15°
screw of out of phase pulley trees intake cams	7.5 daN.m
nut from pulley trees from levas from escape	3 daN.m + 84° 4°
shutter of the lag camshaft dor	1.5 daN.m
tensioner roller nut of distribution	2.7 daN.m

Tightening torques m	
screws of the cap of cylinder head from 1 to 12, from 14 to 19 and 21 - 24	1.5 daN.m
screws of the cap of cylinder head 13 - 20 -22 -23	1.5 daN.m

K4M

Tightening torques m		
spike plug top dead center		2 daN.m
screws Y nuts of upper distribution crankcasebution		4.1 daN.m
sea box screws pose		1.1 daN.m
the ring bolts from lifting motor (side) of steering wheel motor)		1 daN.m
ring screw motor lift (distribution side)		3.5 daN.m



14689

I - REPLACEMENT OF THE CYLINDER HEAD

K4M, and 760 or 761

Position the pistons at mid-stroke.

Degrease imperatively:

- the combustion face of the cylinder head,
- the combustion face of the engine block.

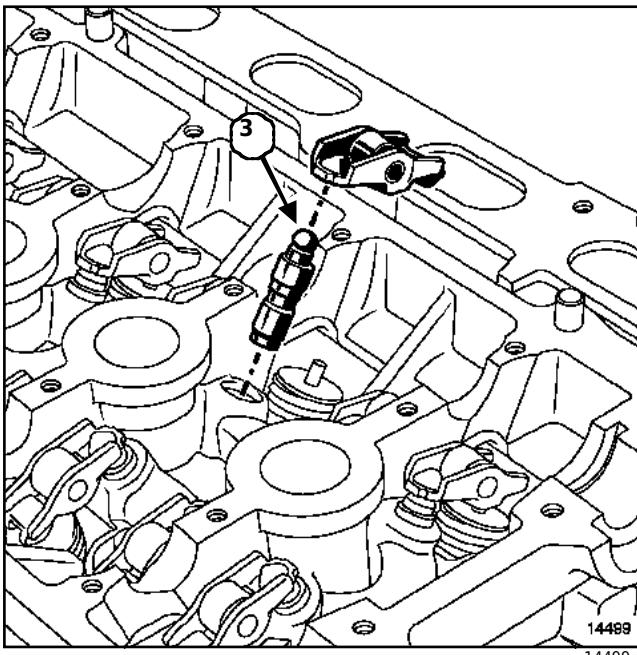
Check the presence of the centering sleeve (**1**) on the engine block.

Fit the (Mot. 104) (**2**) on the engine block .

Place the cylinder head gasket on the engine block.

Tighten the cylinder head bolts in order and to torque
(Chapter Engine and engine underbody assembly, Part engine
discharge: Characteristics, page **10A-5**).

K4M



Press on the upper part of the stop at (3) if there is introduction of the stop piston, immerse it in a container full of diesel.

Put:

- the hydraulic stops,
- the rockers.

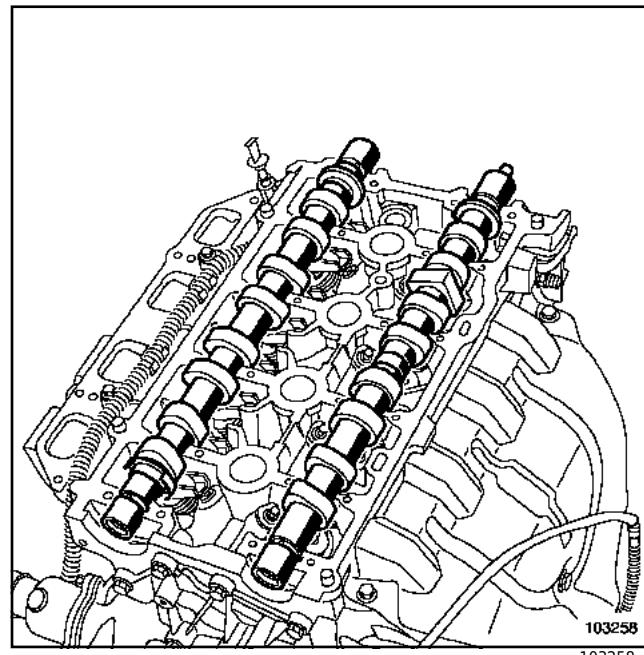
NOTE:

The cylinder head cover gasket planes must be clean, dry and grease-free (avoid fingerprints fingers).

Lubricate the shaft supports with motor oil cylinder head camshaft.

ATTENTION

Do not put oil on the gasket surface of the cover cylinder head.



Position the camshafts by positioning them correctly (Chapter Engine and lower engine assembly).

tor, Top of engine: Features,

page

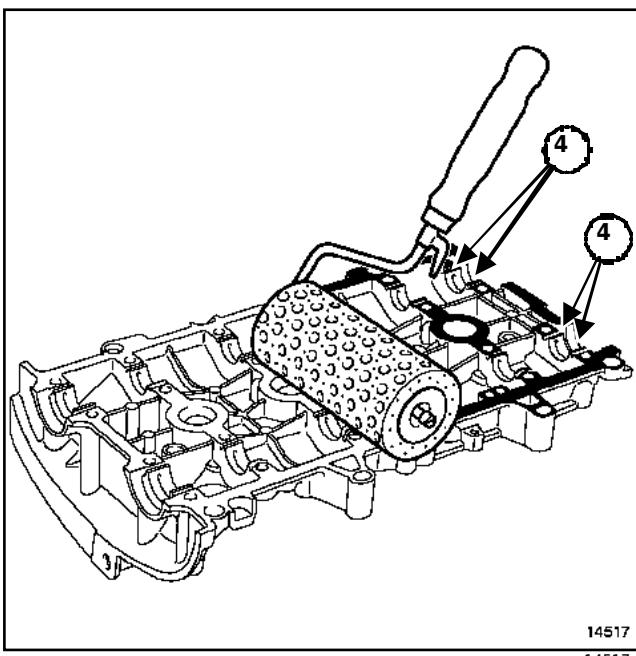
10A-5

NOTE:

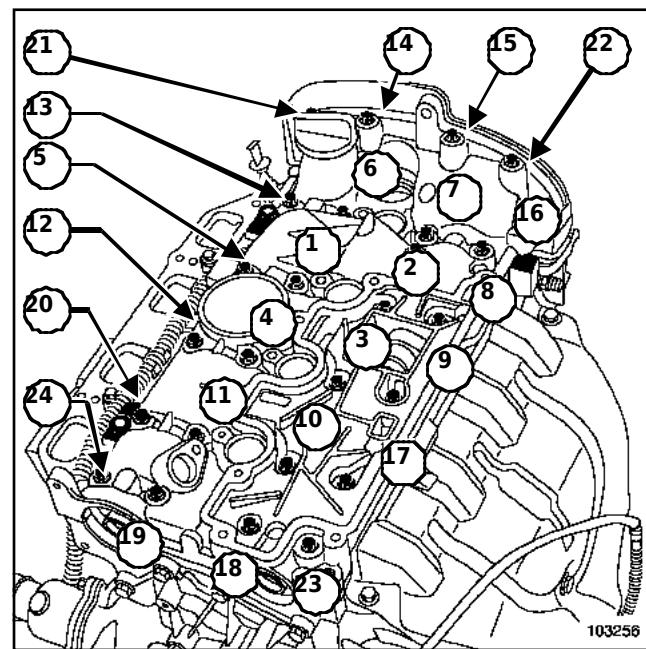
An excess of sealing product in the application cation may cause an overflow of said product during the tightening of the parts.

The product-fluid mixture can cause a degradation of some elements (engine, radiator ache, ...).

K4M



14517



103256

Apply, using a roller (gotelé type) **LOCTITE**

518 on the joint plane until reddish.

Remove the **LOCTITE 518** from the work on the tracks (4) of the six supports of the butt.

Fit the cylinder head cover.

Tighten in order and pairs:

-the bolts of the cylinder head cover 13 - 20 - 22 - 23
a **0.8 daN.m** ,

-the **bolts of the cylinder head cover from 1 to 12, from 14 to 19 and 21 - 24** **(1.5 daN.m)** .

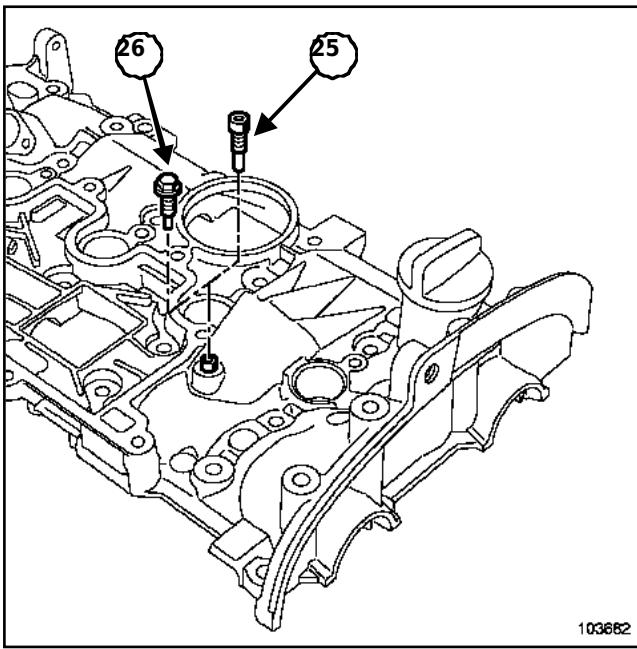
Loosen the cylinder head cover bolts 13 - 20 - 22-23.

Tighten the cover screws in order and to torque cylinder head 13 - 20 -22 -23 (1.5 daN.m) .

**ENGINE AND LOWER ENGINE
ASSEMBLY**Timing - cylinder head: Refit

10A

K4M



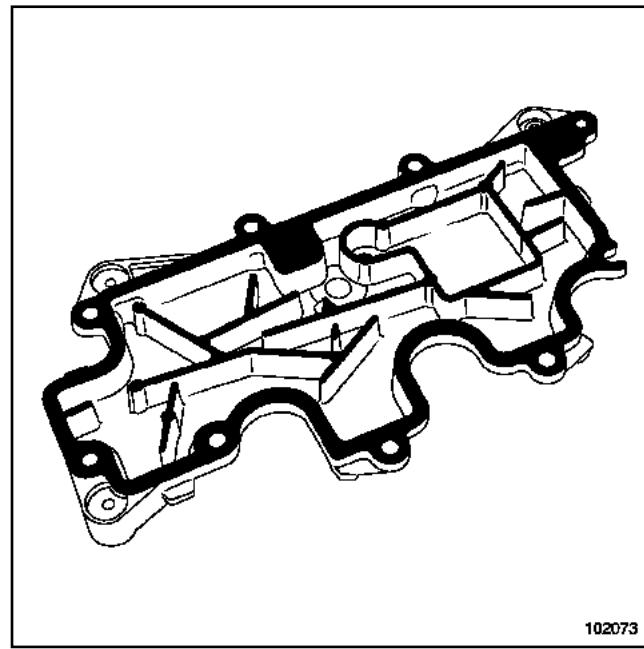
Remove the cam follower locking screw square (**25**) of (Mot. 1669).

Place the initial tappet locking screw of the square cam (**26**) putting a drop of **LOC-TITE FRENETANCH** on the threads.

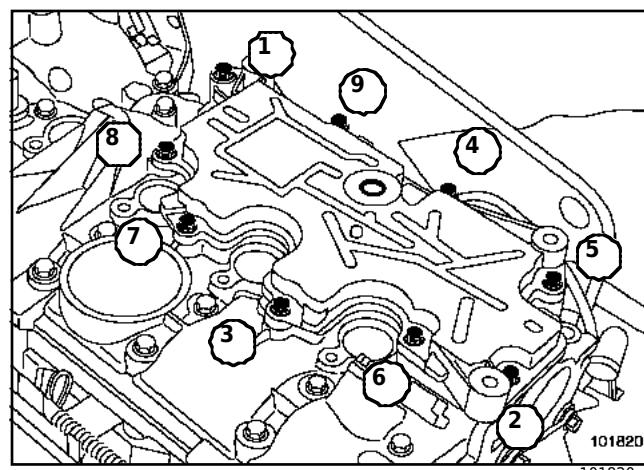
Tighten the **tappet locking screw, square cam** (1.5 daN.m) .

NOTE:

The oil decanter gasket drawings must be clean, dry and grease-free (avoid fingerprints),



Apply, using a roller (gotelé type) **LOCTITE 518** on the joint plane until reddish.



NOTE:

An excess of sealing product in the application cation may cause an overflow of said product during the tightening of the parts.

The product-fluid mixture can cause a degradation of some elements (engine, radiator ache, ...).

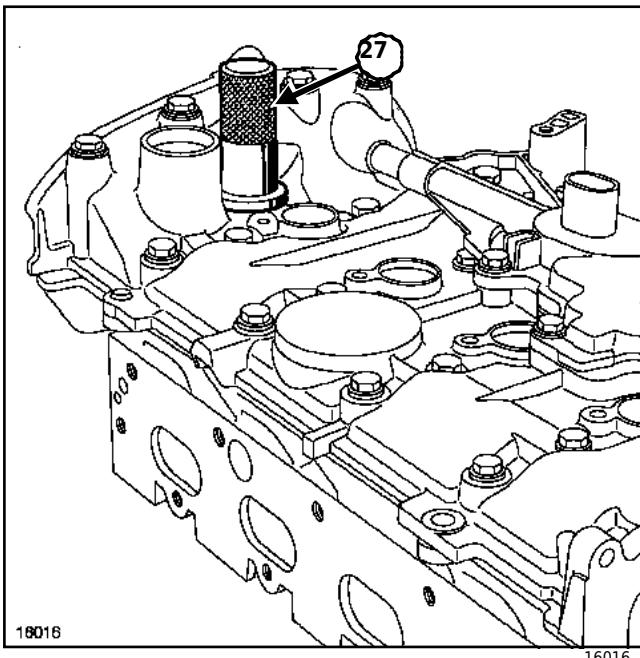
Place the oil decanter.

Tighten in order and to torque:

-the **new screws of the oil decanter in the holes through which the tap** (1.5 daN.m) ,

-the **new or original screws of the decanter of oil in the holes through which the sado the tap** (1 daN.m) .

K4M

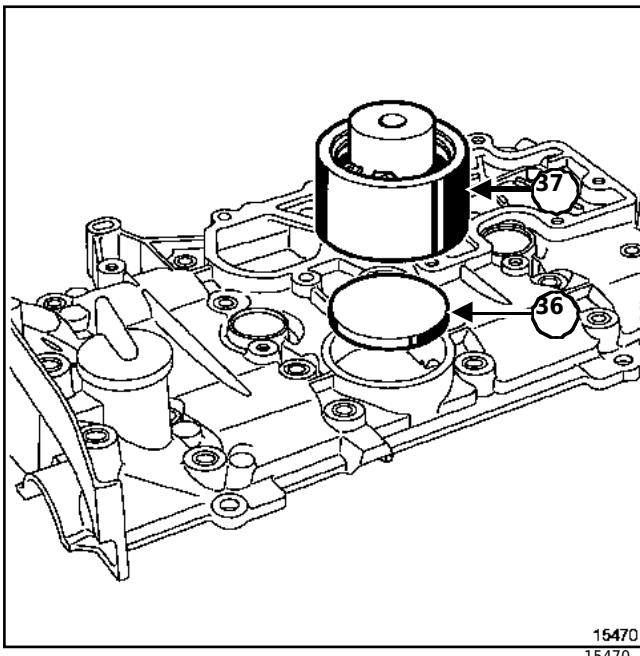


Put:

-the sealing gasket of the solenoid valve of the camshaft phase shifter using tool (Mot. 27)

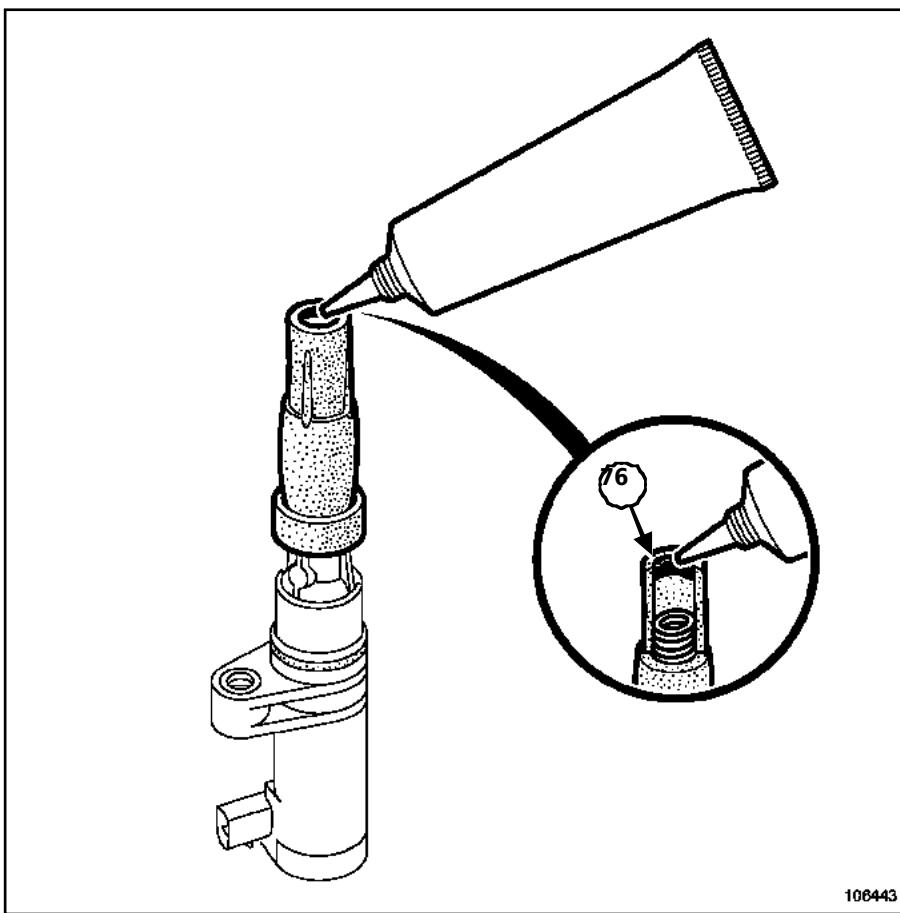
-the camshaft phase shifter solenoid valve.

**Tighten the screw of the solenoid valve to the torque
camshaft phase shifter (1 daN.m).**



Fit the pad (36) of the cylinder head cover by means of the tool (Mot. 1503) (37).

K4M

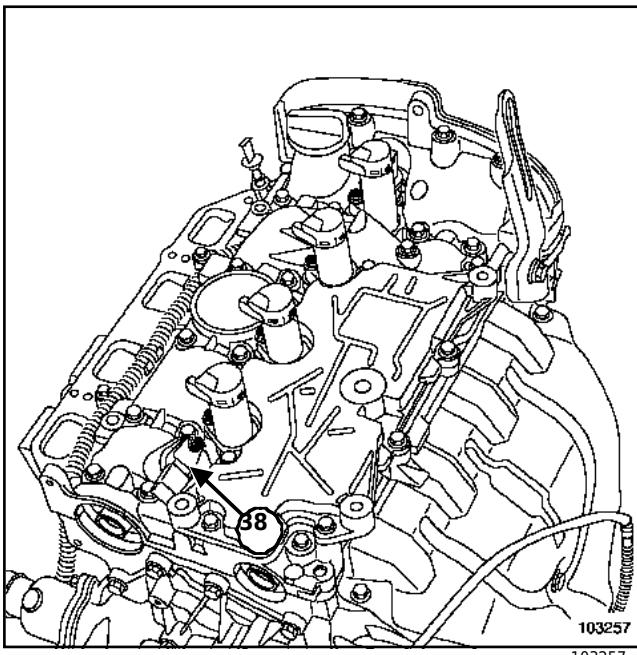


106443

106443

Put a string on the four ignition coils
(76) of **FLUORATED GREASE 82 00 168 855** of a
diameter of **2 mm** in the inner contour of the
high voltage chon.

K4M



103257

Fit the spark plugs.

Torque the **spark plugs** **(2.5 to 3 daN.m)** with help from the spark plug key case (Ele. 1382).

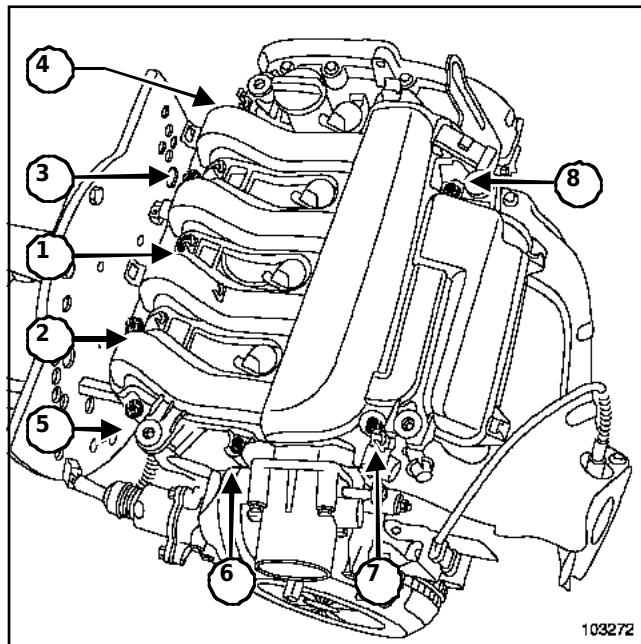
Fit the ignition coils.

Tighten the **input coil screws** **yielded** **(1.5 daN.m)**.

Fit the cylinder identification sensor (**38**) fitted with a new gasket.

Tighten the identification sensor screw to torque.
cylinders **(1 daN.m)**.

Systematically replace all seal seals.quality of the admission dealer.

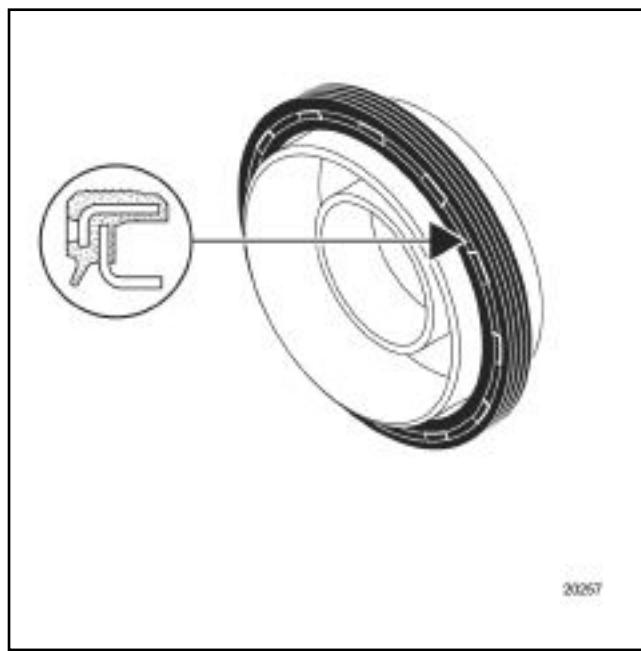


103272

Place the intake manifold.

Tighten in the order and to the torque the **screws of the intake manifold** **(0.9 daN.m)**.

Placement of the watertight joints of the Camshafts

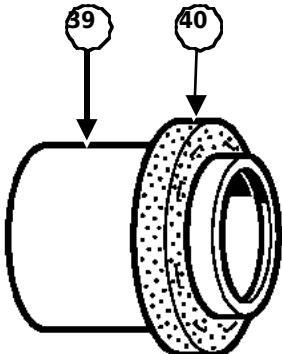


20257

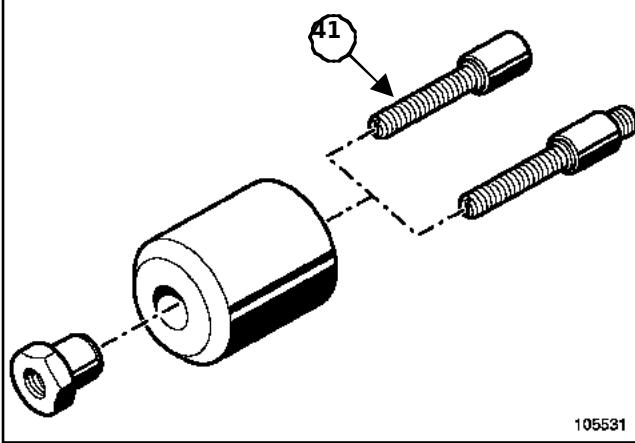
The elastomer seal of these engines is equipped a flat sealing lip (**20**) and a protector (**21**) (also used for mounting the gasket on the engine).

K4M

a - Placement of the sealing gasketexhaust camshafts



18687
18687

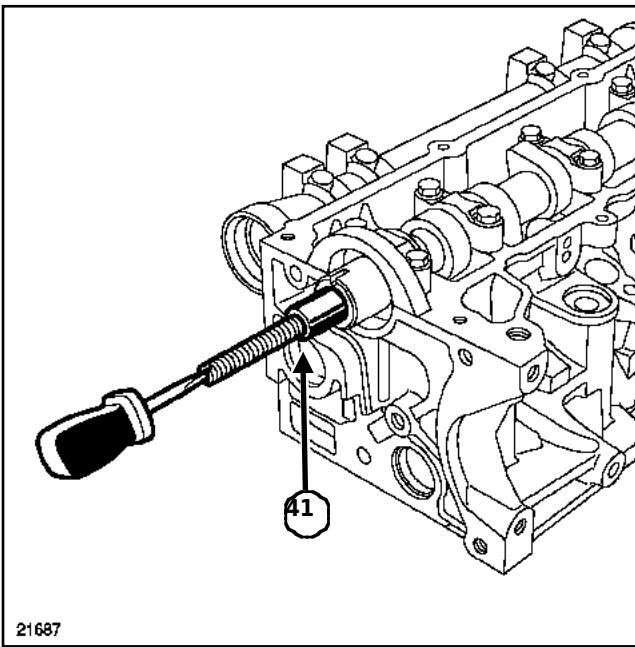


105531
105531

ATTENTION

Take imperatively the gasket by the protector(**39**) during handling, since this type of board is very FRAGILE. It is strictly forbidden it should be possible to touch the elastomer seal (**40**) to avoid any oil leaks once it is in place.

the sealing gasket on the engine.



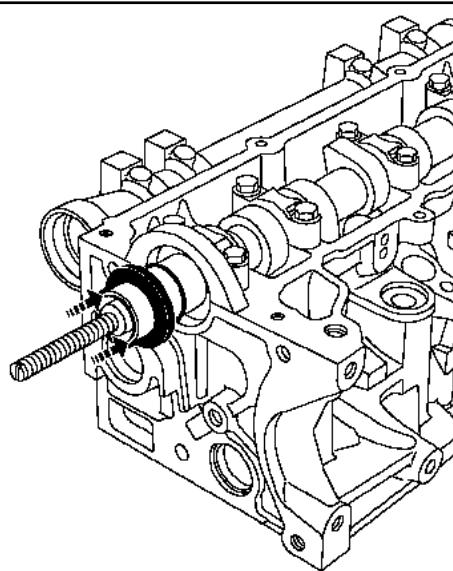
21687

Screw the stud (**41**) of (Mot. 1632) into the shaftbowl of cams.

**ENGINE AND LOWER ENGINE
ASSEMBLY**Timing - cylinder head: Refit

10A

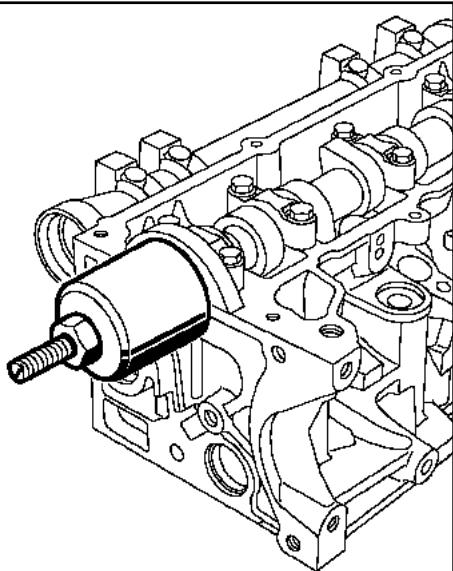
K4M



21687-1

21687-1

Put the protector equipped with
the watertight joint (taking care to
do not touch the gasket).

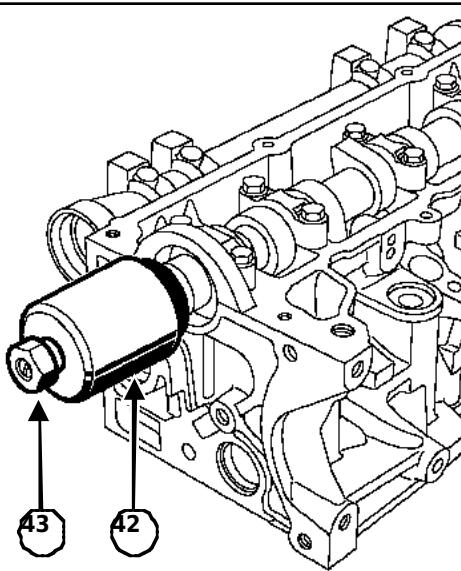


21687-3

21687-3

Screw in the shoulder nut until it clicks.
I touch the bell with the butt.

Remove the nut, the bell, the protector and the
rodthreaded.



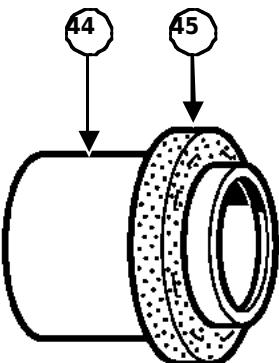
21687-2

21687-2

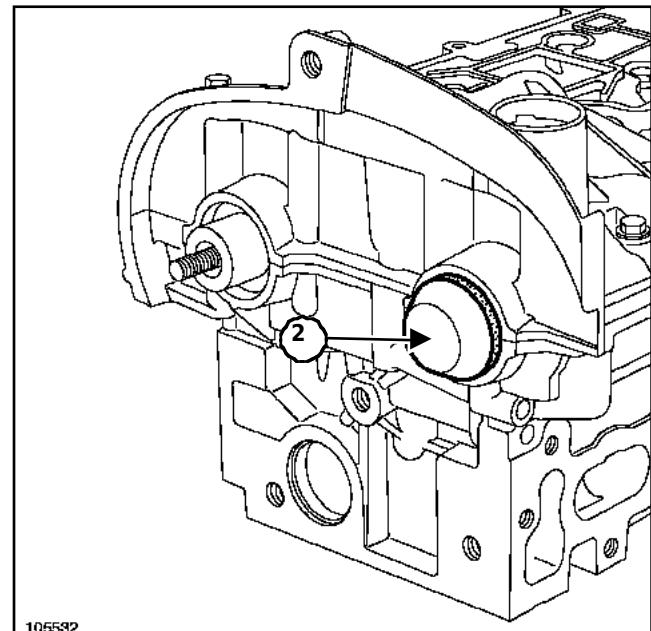
Fit the bell (**42**) and the flange nut (**43**)del
(Mot. 1632).

K4M

b - Placement of the watertight gasket of the intake camshafts



18687
18687



105532

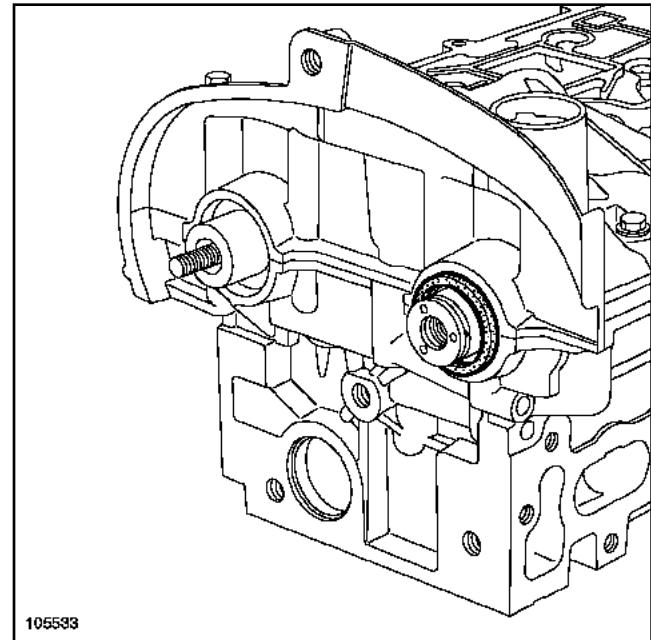
105532

Put the protector (2) equipped on the camshaft of the watertight joint (taking care not to touch the gasket).

Push in the center of the protector to engage the board at your accommodation.

ATTENTION

Take imperatively the gasket by the protector(44) during handling, since this type of board is very FRAGILE. It is strictly forbidden it should be possible to touch the elastomer seal (45) to avoid any oil leaks once it is in place.the sealing gasket on the engine.



105533

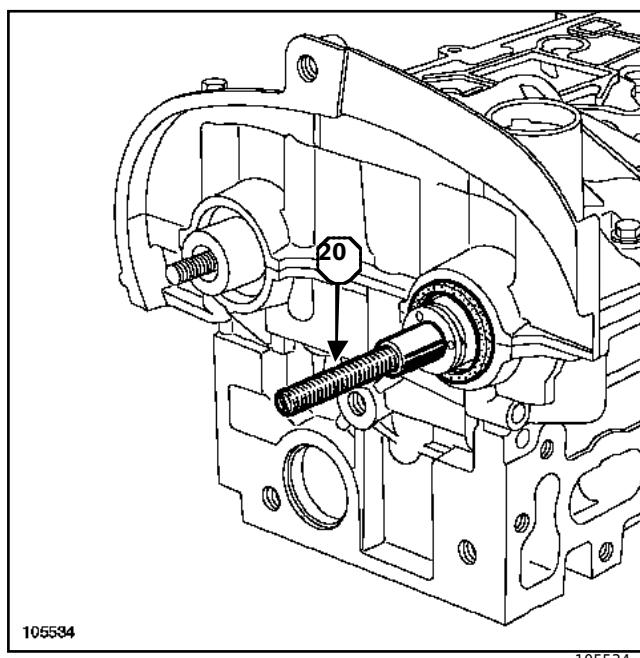
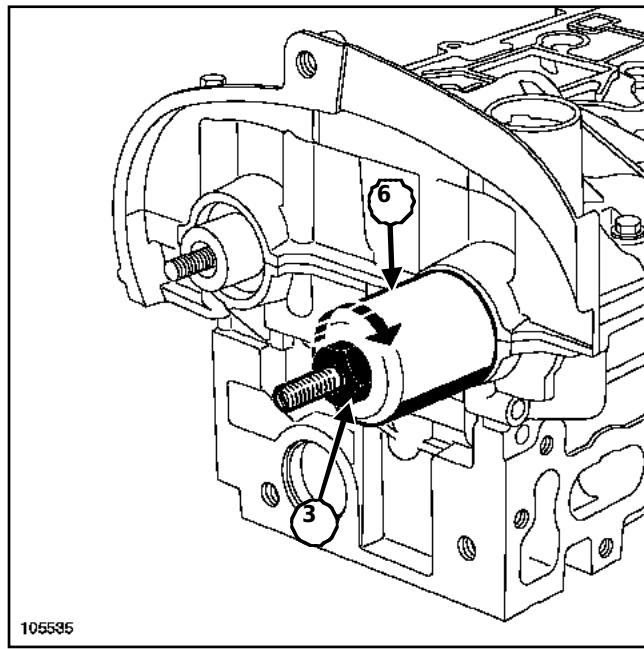
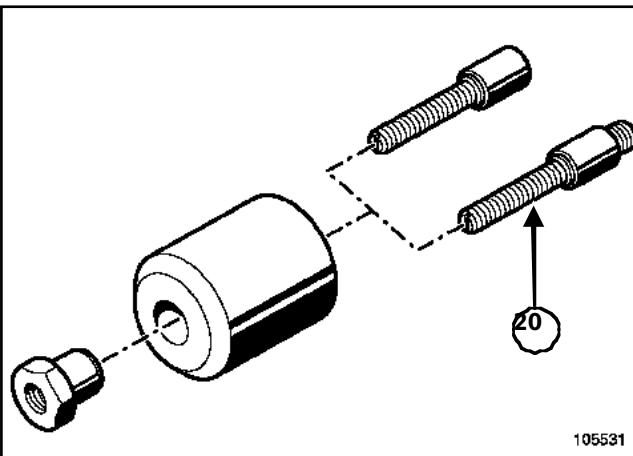
105533

Remove the seal protector paying attention so that the gasket does not fall off.

**ENGINE AND LOWER ENGINE
ASSEMBLY**Timing - cylinder head: Refit

10A

K4M



Screw the stud (20) of (Mot. 1632) into the shaftbowl of cams.

Fit the bell (6) and the flange nut (3) of (Mot. 1632).

Screw in the shoulder nut until it clicks.I touch the bell with the butt.

Remove the nut, the bell and the threaded rod.

K4M

**II - REPLACEMENT OF
THE DISTRIBUTION**

K4M, and 760 or 761

ATTENTION

It is essential to replace the nut and the screw camshaft pulleys, camshaft bolt crankshaft accessory pulley.

ATTENTION

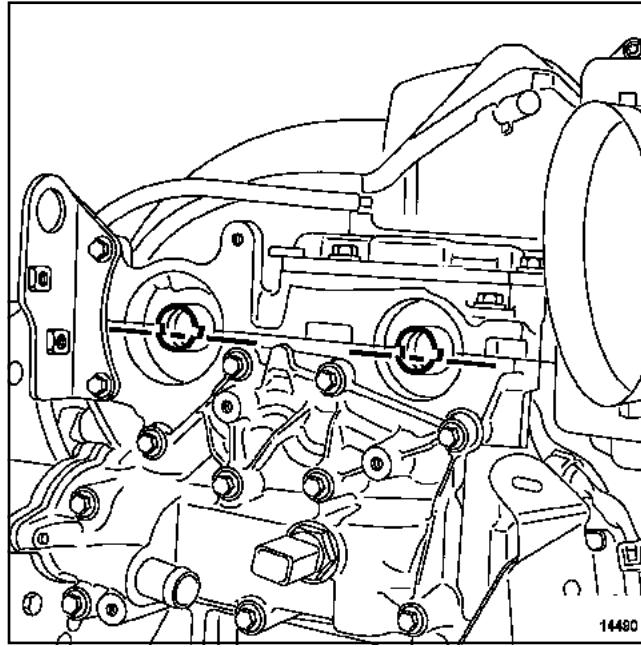
Degrease imperatively:

- the end of the crankshaft,
- the inside diameter and the bearing faces of the timing pinion,
- the support faces of the accessory pulley of the crankshaft,
- the ends of the camshafts (distributor side) button,
- the internal diameters and the bearing faces of camshaft pulleys.

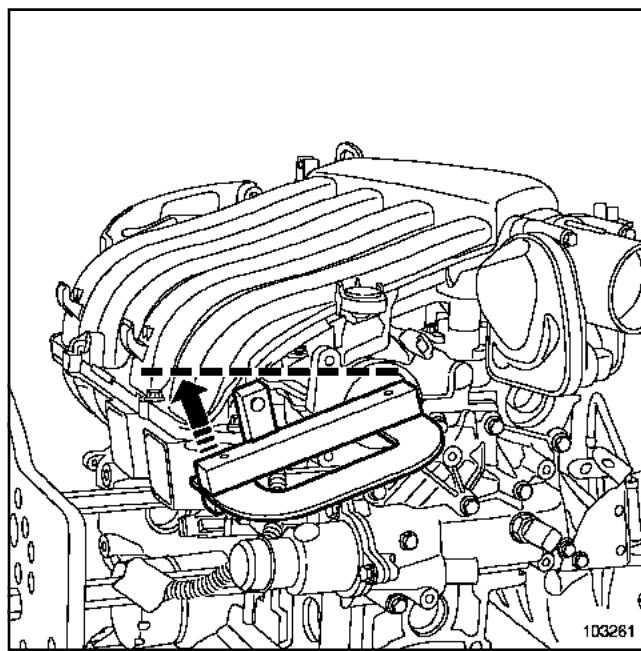
This is to avoid skidding between:

- the crankshaft,
- the camshaft pulleys.

This skidding causes the destruction of the engine.



14490
14490



103261
103261

ATTENTION

Never turn the engine in the opposite direction to operation.

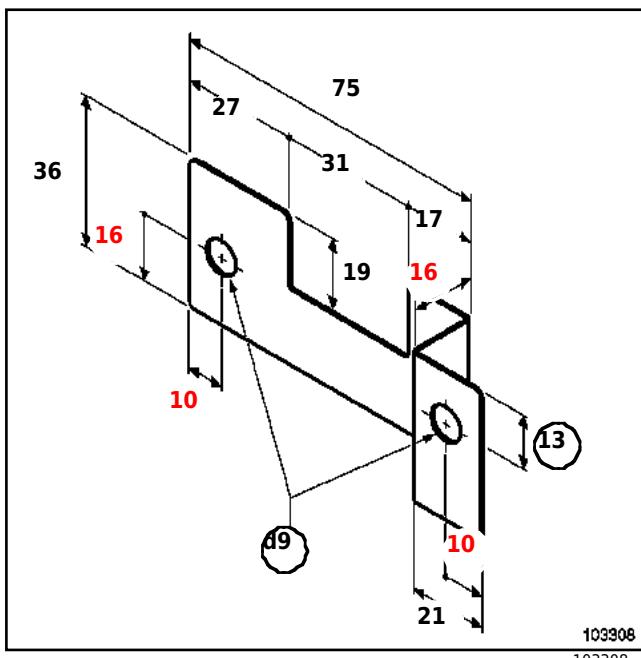
Position the camshaft grooves horizontally and vertically and off-center down by turning the camshafts with the help of (Mot. 1496), if necessary.

ENGINE AND LOWER ENGINE ASSEMBLY

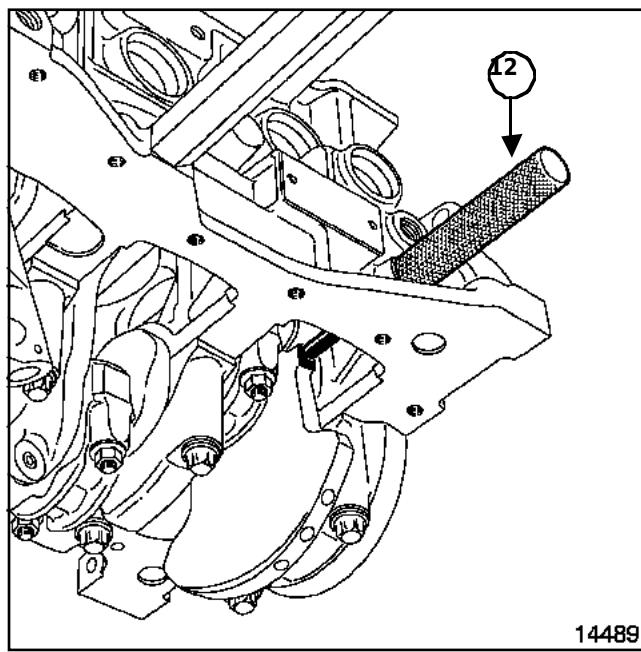
Timing - cylinder head: Refit

10A

K4M



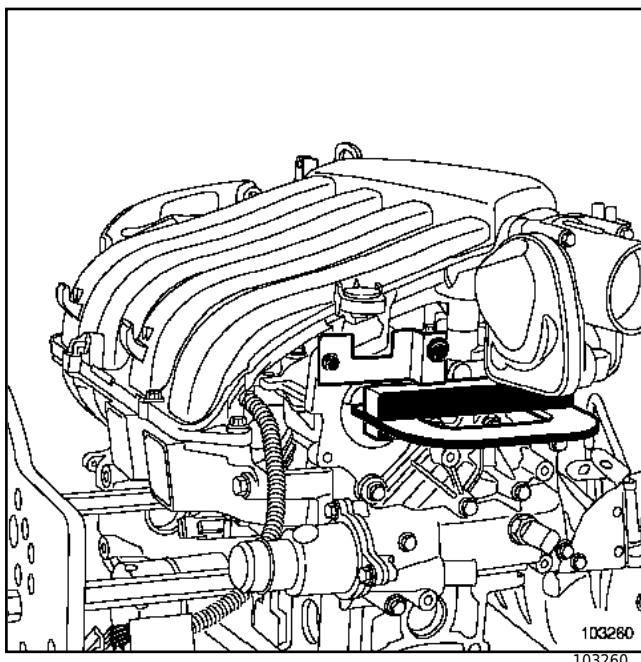
103308



14489

14489

Conduct a locally made squad to keep the tool (Mot. 1496) in place.



103260

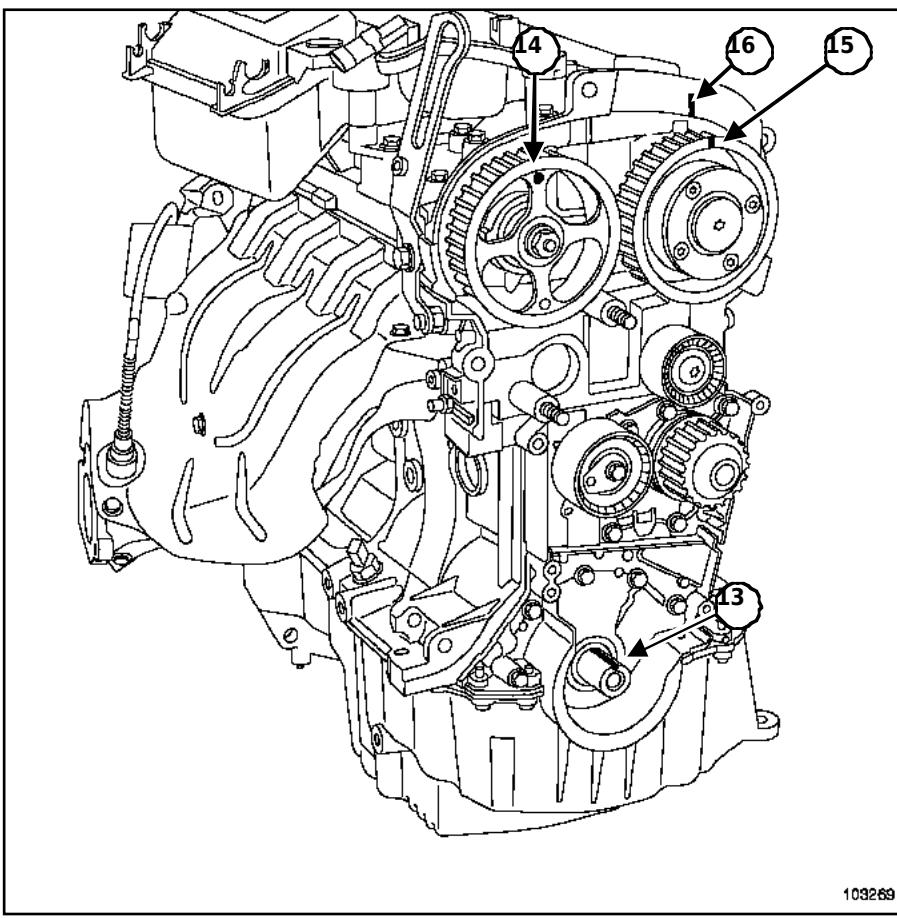
Fix the tool (Mot. 1496) at the end of the shaftcam.

Check that the crankshaft is well supported on the top dead center pin (Mot. 1489) (**12**) and the groove (**13**) in crankshaft must be facing above.

Put:

- the exhaust camshaft pulley fitted with a new nut,
- the intake camshaft phase shifter equipped with a new screw, checking that the connection is well blocked (without rotation to the left or to the right of the corona).

K4M



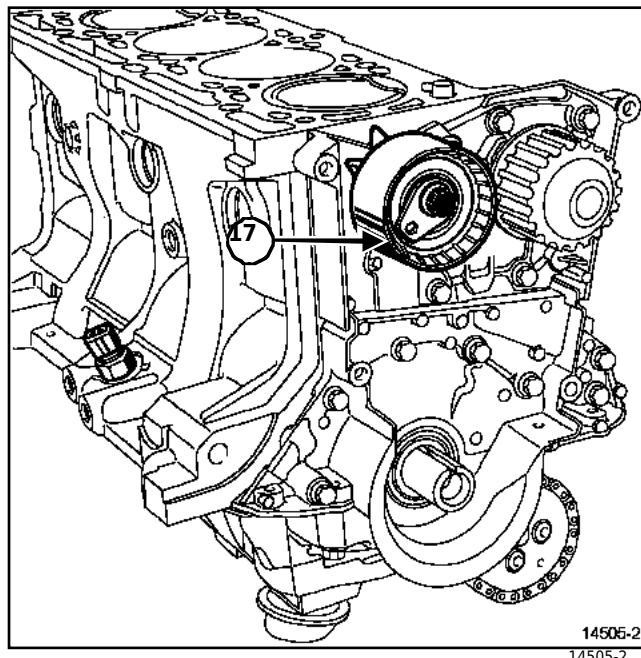
103269

103269

Position:

- the RENAULT logo (**14**) engraved on the branch of the po-read exhaust camshafts vertically and upwards,
- the mark (**15**) of the phase shifter vertically and towards above.

Make a mark (**16**) with a pencil between the crown of the phase shifter and the cylinder head cover.



14505-2

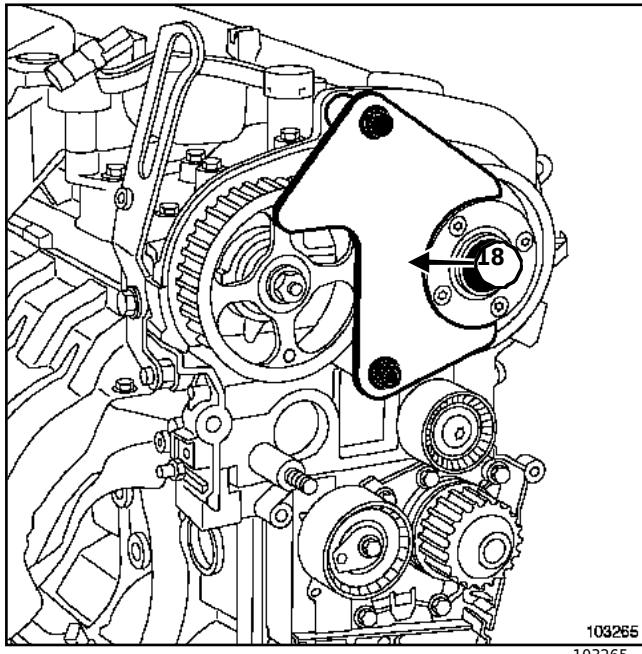
14505-2

Position the tensioner roller by positioning the spur of the tensioner roller in groove (**17**).

Fit the crankshaft timing pinion.

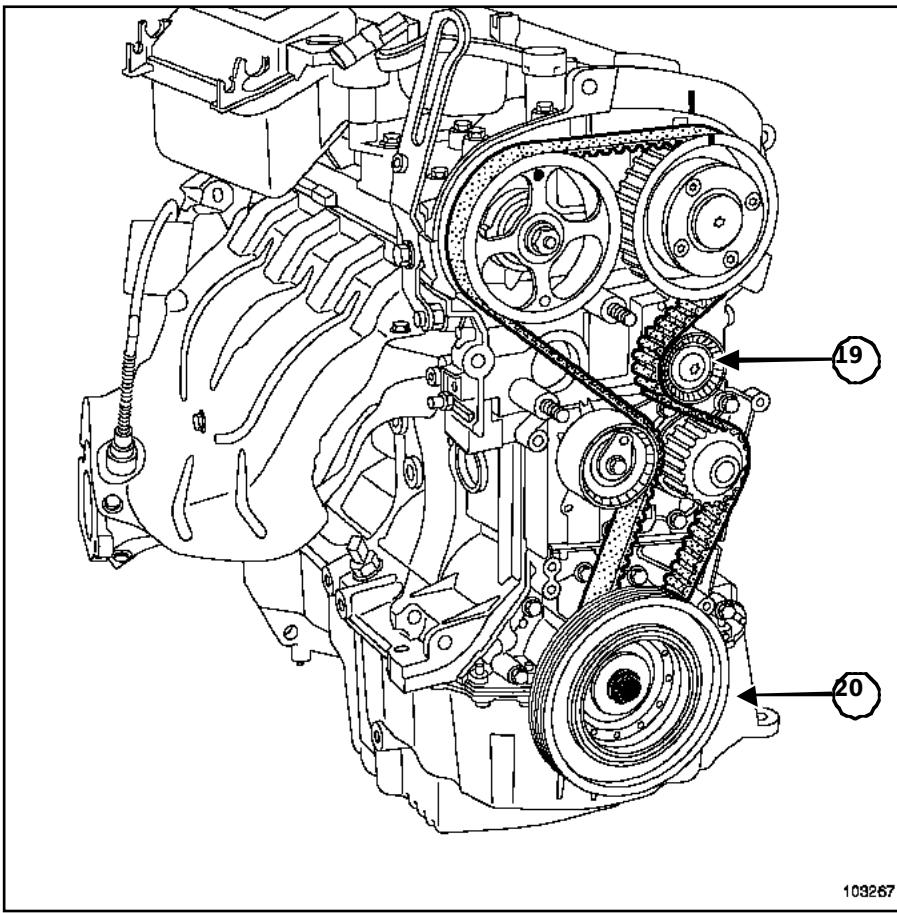
K4M

Place the timing belt on the pulleys of the camshafts
(without moving the pulleys of the camshaftcam).



Fit the locking tool (**18**) of the idler pulleys camshafts
(Mot. 1490-01) ;.

K4M



103267

103267

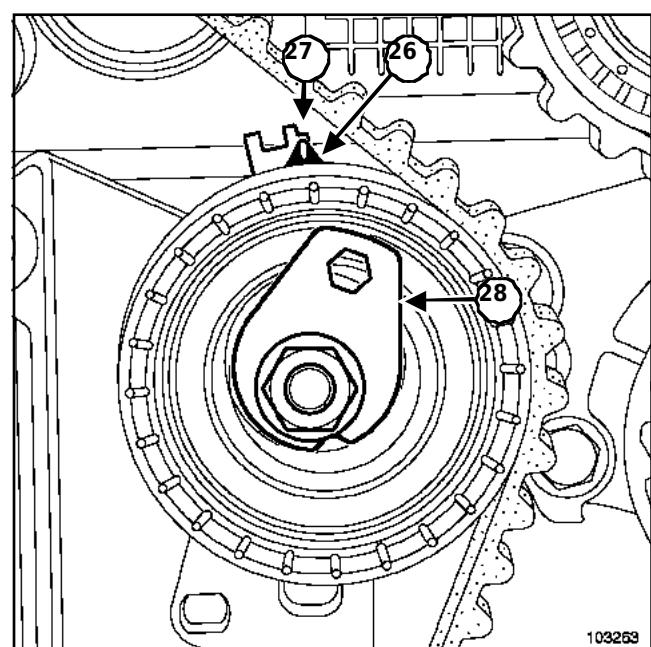
Fit the distribution winder roller (**19**).

Torque tighten the **screw of the winding roller**.

distribution (4.5 daN.m) .

Fit the crankshaft accessory pulley (**20**)fitted with a new screw (without blocking the screwing, **2 to 3 mm** clearance between screw and pulley).

1 - Timing belt tension



103263 Bring the moving index (**26**) in front

of the notch(**27**), turning the eccentric (**28**)

clockwise **clockwise** using a 6- inch hex

wrenchmm

K4M

Torque tighten the nut of the timing tensioner pulley.

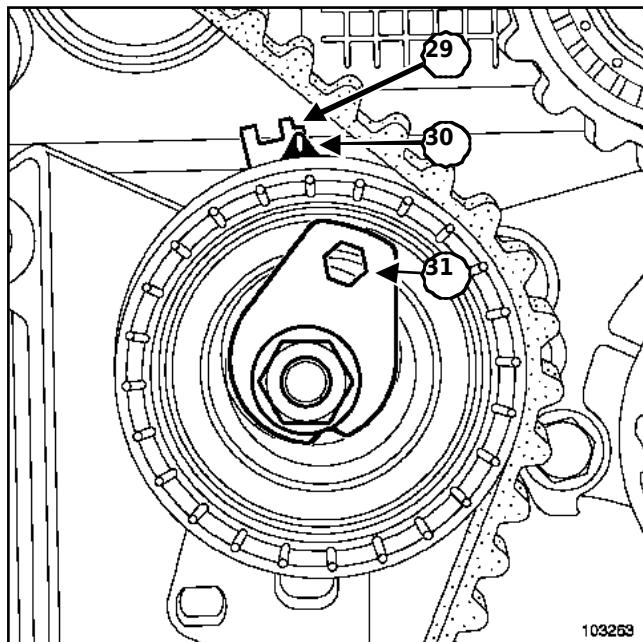
tion **0.7 daN.m** .

Remove the shaft pulley locking toolcam (Mot. 1490-01).

NOTE:

check that the nut and bolt of the pulleyscamshafts do not make contact with their respective pulleys. Also, push oncein time the camshaft pulleysagainst the camshafts.

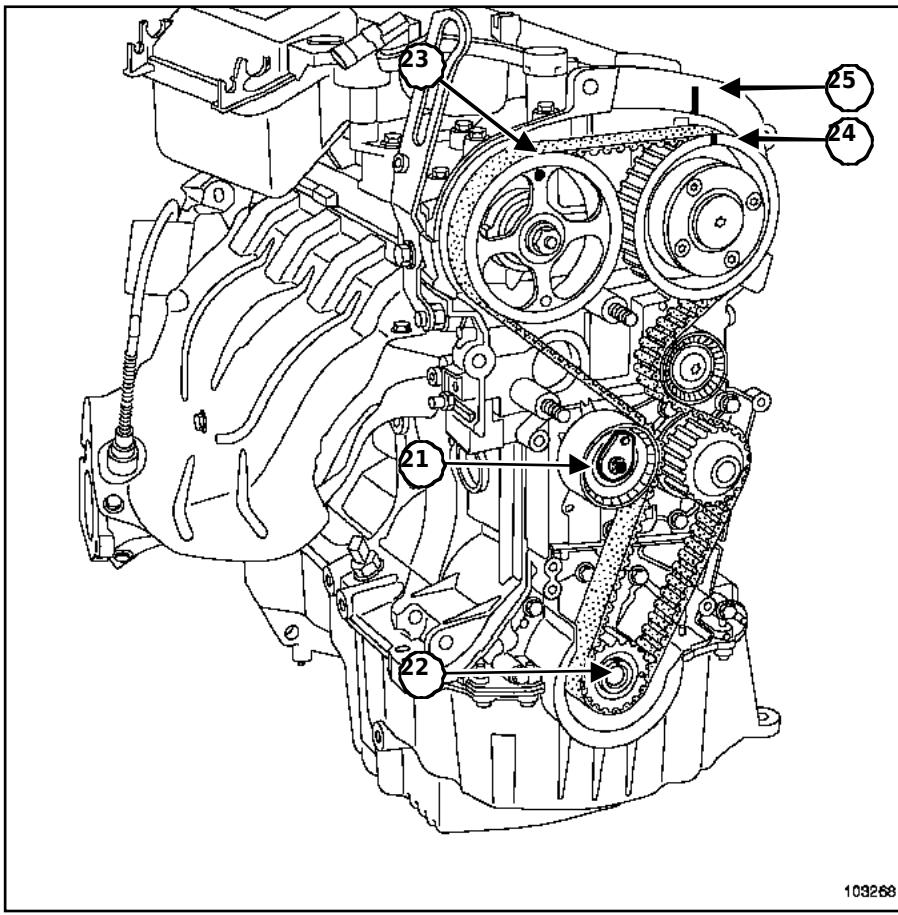
Perform a six-turn rotation of the distributionthe exhaust camshaft pulley with help from (Mot. 799-01).



103263 Verify that the moving index (30) is in front of the notch (29), if not loosen a maximum of one turnthe timing tensioner roller nut holdingat the same time the eccentric by means of a hexagonal wrenchof **6 mm** .

Progressively bring the moving index (30) againststthe notch (29) by turning the eccentric (31) in the directionclockwise.

K4M



103268

103268

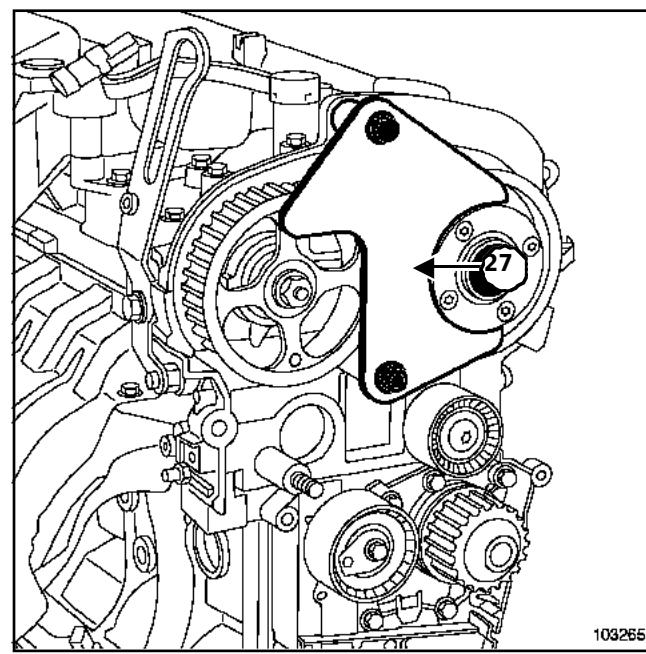
Torque tighten the **nut of the timing tensioner pulley.**

variation (2.7 daN.m) (21).

Check that:

-the RENAULT logo (23) engraved on the branch of the po-read exhaust camshafts vertically and upwards,

-the mark (24) on the phase shifter is aligned with the mark (25) previously made by the operator.



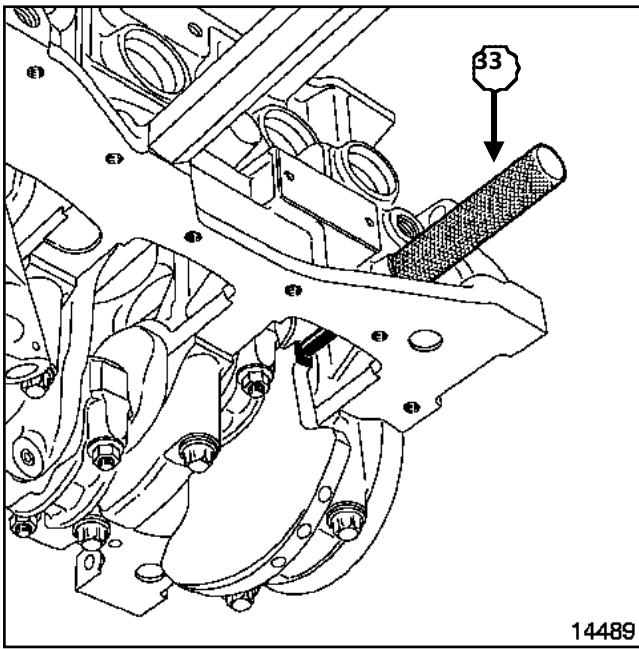
103265

103265

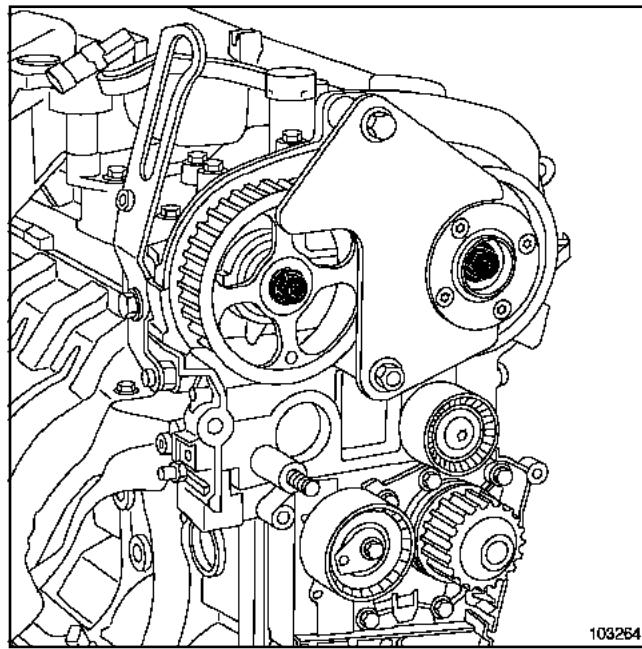
Fit the locking tool
les de levas (Mot. 1490-01) (27).

of the pulleys of the trees

K4M



14489
14489



103264
103264

ATTENTION

Check that the crankshaft rests on the top dead center (Mot. 1489) (**33**)
Y the crankshaft groove (**22**) must be looking upwards.

Tighten the **screw of the posi-read** of crankshaft accessories (4 daNm + 115° **15°**) (crankshaft resting on point pinton dead).

Torque tighten **pulley phase shifter bolt**

intake camshaft

(7.5 daN.m) .

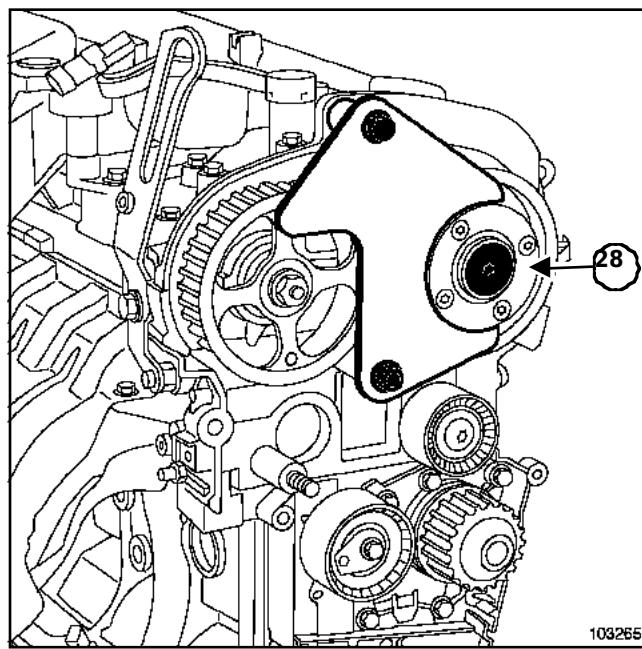
Tighten to torque and angularly the

read exhaust camshafts

po-

(3 daN.m + 84°

4°



103265
103265

Fit the new plug (**28**) of the gear shifter.camshaft.

Tighten the **shutter of the air gap cam bowl** (1.5 daN.m) .

K4M

Extract:

- the camshaft setting tool (Mot.1496),
- the locking tool for the axle shaft pulleys-vas (Mot. 1490-01),
- the top dead center pin (Mot. 1489).

2 - Checking the timing of the timing belt

a - Tension control

Turn the crankshaft two times in a clockwise direction.distribution side, and before the end of the

two laps:

- screw the top dead center pin (Mot.1489) on the engine block,
- Raise the crankshaft slowly and without jerks until rest it on the upper neutral pin.
prior. (Mot. 1489)

Remove top dead center pin.

Check that the indexes of the timing tensioner roller are aligned, if not, redo the tension loosening the nut of the eccentric of the tensioner roller.

Correctly align the moving index with respect to the index It says fixed or to the notch.

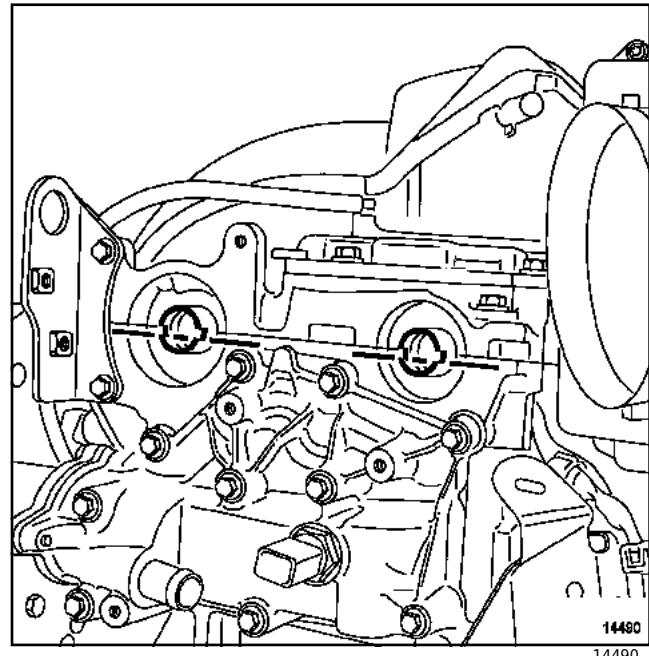
Torque tighten the **nut of the timing tensioner pulley. button (2.7 daN.m)**.

b - Draft control

Make sure the correct position of the indexes on the distribution tensioner roller before carrying out control of the draft of the distribution.

Screw in the top dead center pin (Mot. 1489) on the engine block.

Bring the crankshaft slowly and smoothly to rest it on the top dead center pin.



Fit (without forcing) the tool for setting the shafts cams (Mot. 1496) (the grooves at the end of the camshafts must be horizontal and lowered drawn down).

NOTE:

If the camshaft setting tool is not introduced, the draft of the distribution must be redone. button and tension.

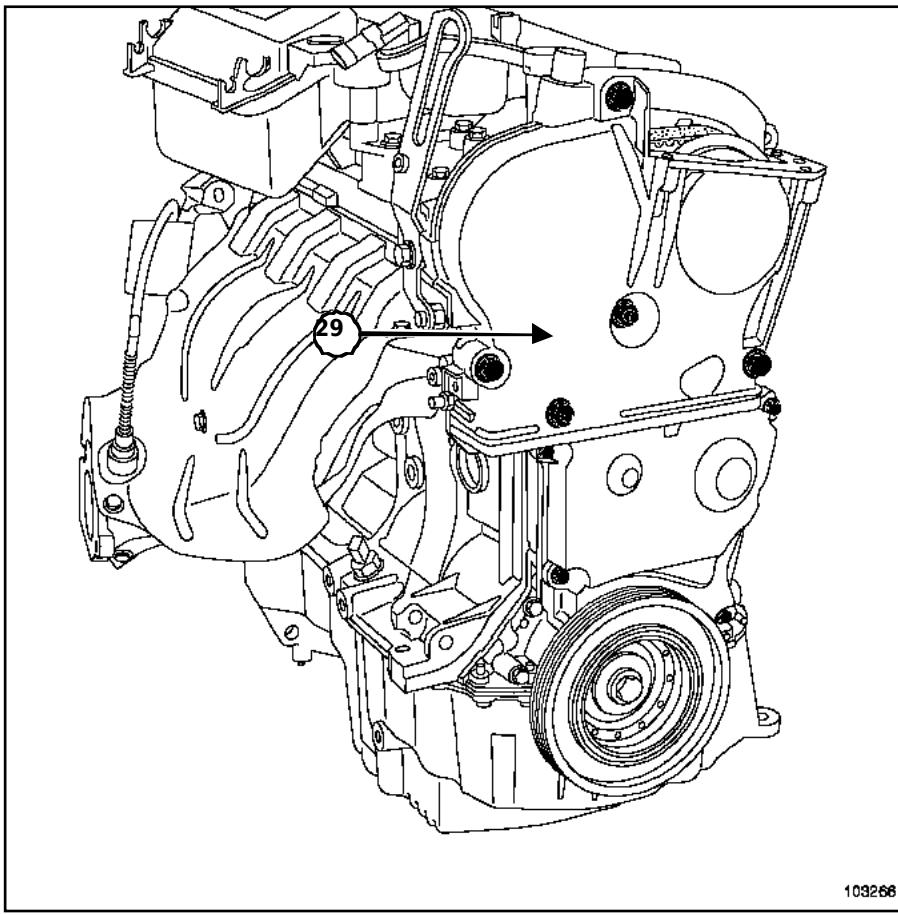
Fit the cap of the upper neutral pin. prior applying a point of **RHODORSEAL 5661** in the threaded hole.

Torque tighten the **knit dowel plug top dead (2 daN.m)**.

**ENGINE AND LOWER ENGINE
ASSEMBLY**Timing - cylinder head: Refit

10A

K4M

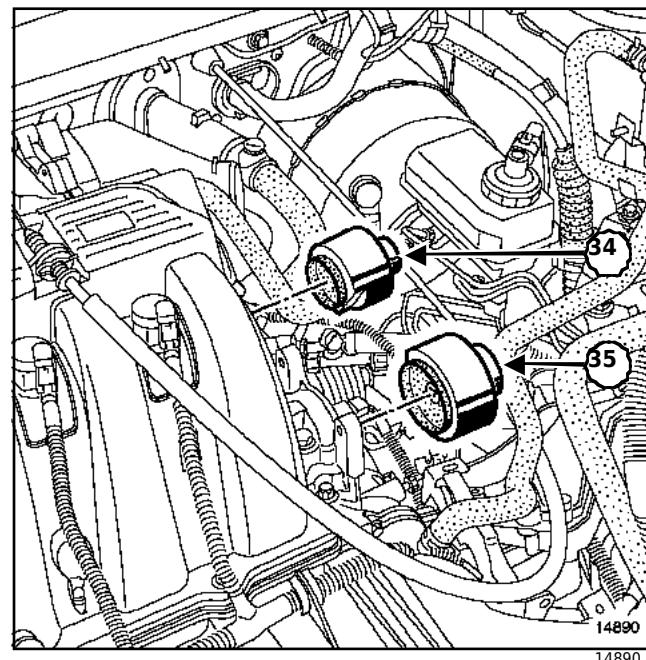


103266

103266

Fit the distribution crankcases.

**Tighten the screws and nuts of the sump sump to torque.
lower distribution (4.1 daN.m) .**



14890

Place the new sealing plugs in the end of
camshafts:

-use for the intake camshaft (Mot.35

K4M

-use for the exhaust camshaft (Mot.34

Fit the butterfly box equipped with a gasket new.

Torque tighten the **butterfly box screws (1, 1 and N.m)**.

Fit the engine lifting rings.

Tighten the pair:

- **the screws of the lifting eye of the engine (flywheel side) (1 daN.m)**,

- **the screw of the engine lifting ring tor (distribution side) (3.5 daN.m)**.

ENGINE AND LOWER ENGINE ASSEMBLY

Timing - cylinder head: Refit

10A

Essential specialized tooling	
Against. 104	Feet for centering gasket and cylinder head
Against. 1503	Useful for put the cap pickup butt
He. 1382	Key case from spark plugs 16 & 21 mm pair 1,75 & 2,8 daN.m + square adapter 9- 9,52 for wrench He. 1086
Against. 1491	Useful for put the sealing gasket camshaft
Against. 1632	Useful for put the camshaft gasket
Against. 799-01	Immobilizer from the pinions for correia jagged from distribution
Against. 1496	Useful for setting the Camshafts
Against. 1489	Peg of setting top dead center
Against. 1490-01	Blocking and draft of the pulleys of the trees cam them
Against. 1487	Useful for replacement of tree tops levas (diameter 57 mm)
Against. 1488	Useful for replacement of tree tops levas (diameter 43 mm)

Tightening torques m	
screws new of oil decanter in the holes through which no I know he has last the tap	1.5 daN.m
new or ori-decanter gene oil in the holes for the that I know he has last the macho from thread	1 daN.m
plugs	2.5 a 3 andN.m
coil screws ignition	1.5 daN.m
screws of delivery man of admission	0.9 daN.m
sea box screws pose	1.3 daN.m
screws from the housing air filter	0.9 daN.m
roller screw wind-distribution lator	4.5 daN.m
tensioner roller nut of distribution	2.7 daN.m
screw the pulley crankshaft accessories	4 daN.m + 115° 15°
nut from pulley trees from levas from admission	3 daN.m + 84° 4°
nut from pulley trees from levas from escape	3 daN.m + 84° ±±± 4°
tensioner roller nut of distribution	2.7 daN.m
spike plug top dead center	2 daN.m
screws Y nuts of upper distribution crankcase button	4.1 daN.m

Tightening torques m	
screws of the cap of cylinder head from 1 to 12, from 14 to 19 and 21 - 24	1.5 daN.m
screws of the cap of cylinder head 13 - 20 -22 -23	1.5 daN.m

Tightening torques m	
the ring bolts from lifting motor (side motor)	1 daN.m
ring screw motor lift (distribution side)	3.5 daN.m

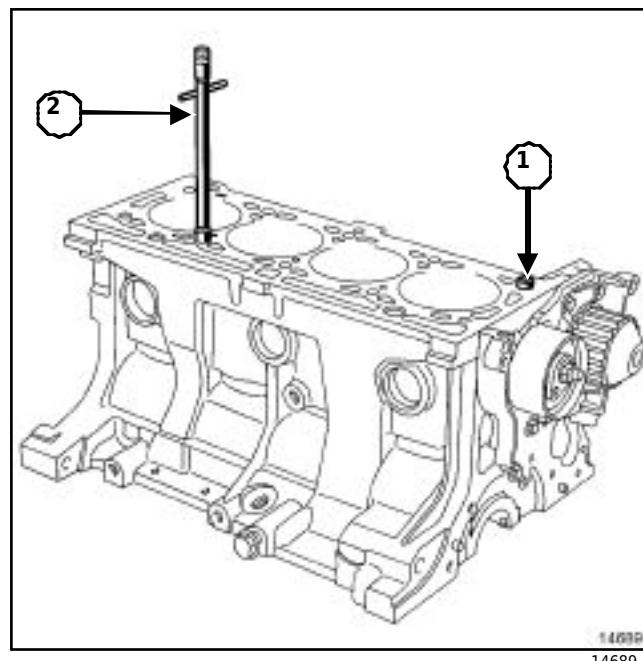
I - REPLACEMENT OF THE CYLINDER HEAD

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730
o 732 or 750 - K4M, and 700 or 701 or 704 or 706708
o 709 o 710 o 711 o 712 o 714 o 720 o 724 o 734 o 740
o 742 o 743 o 744 o 745 o 748 o 750 o 752 or 753

Position the pistons at mid-stroke.

Degrease imperatively:

- the combustion face of the cylinder head,
- the combustion face of the engine block.

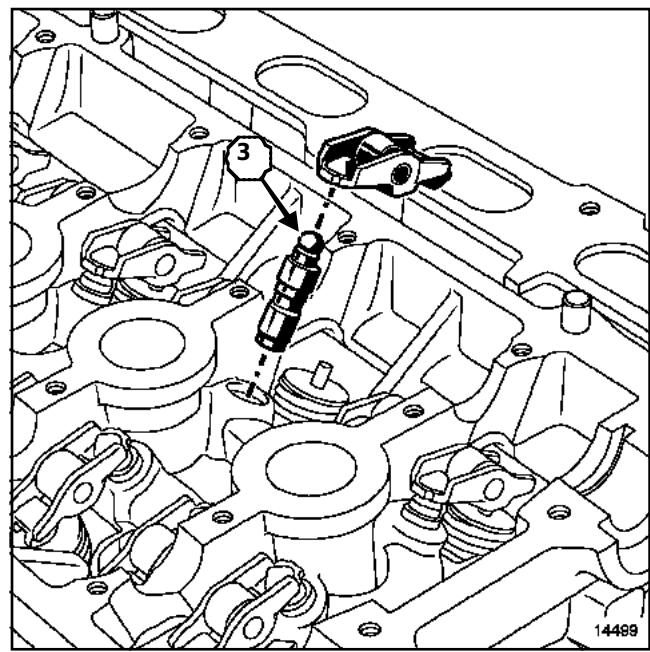


Check the presence of the centering sleeve **1**
on the engine block.

Fit the (Mot. 104) (**2**) on the engine block .

Place the cylinder head gasket on the engine block.

Tighten the cylinder head bolts in order and to torque(Chapter
Engine and engine underbody assembly, Partengine discharge:
Characteristics, page **10A-5**).



Press on the upper part of the stop at (**3**) if
there is introduction of the stop piston, immerse it
in a container full of diesel.

Put:

- the hydraulic stops,
- the rockers.

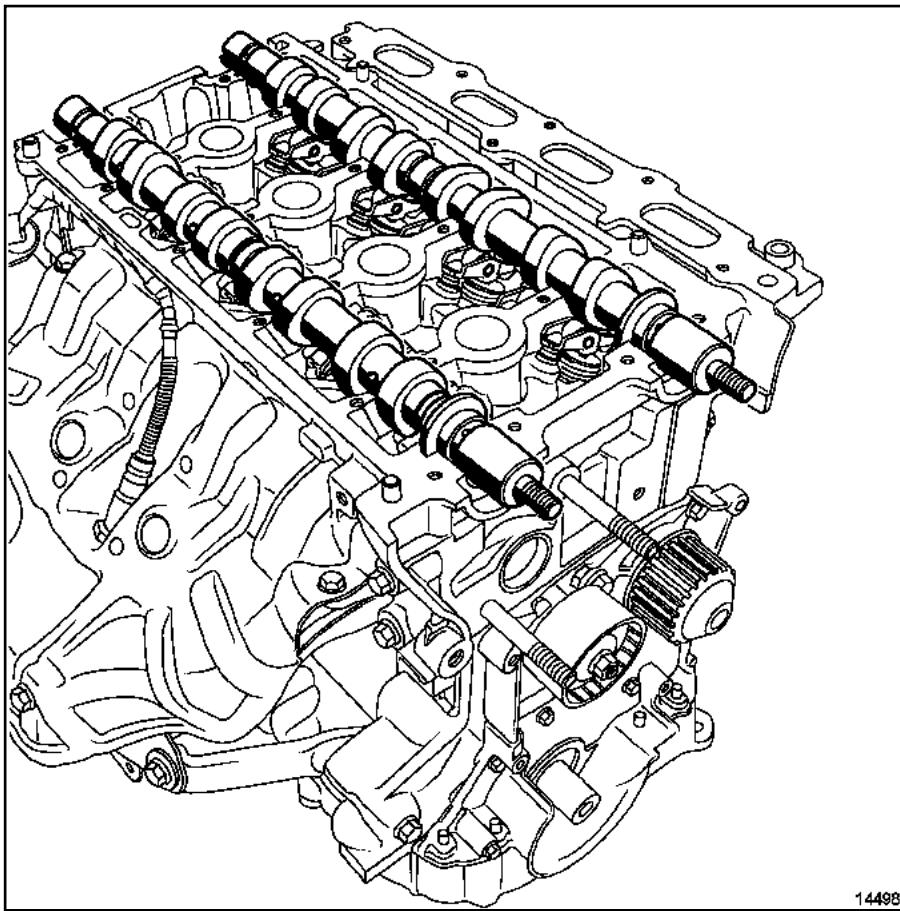
NOTE:

The cylinder head cover gasket planes must be
clean, dry and grease-free (avoid
fingertips).

Lubricate the shaft supports with motor oil cylinder
head camshaft.

ATTENTION

Do not put oil on the gasket surface of the
cover cylinder head.

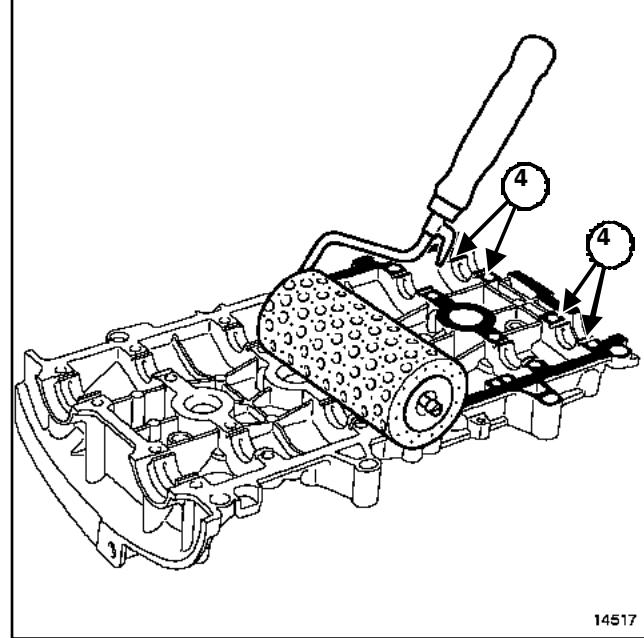


14498
14498

Position the camshafts by positioning them cor-
(Chapter Engine and lower engine assembly).
tor, Top of engine: Features,
10A-5 page

NOTE:

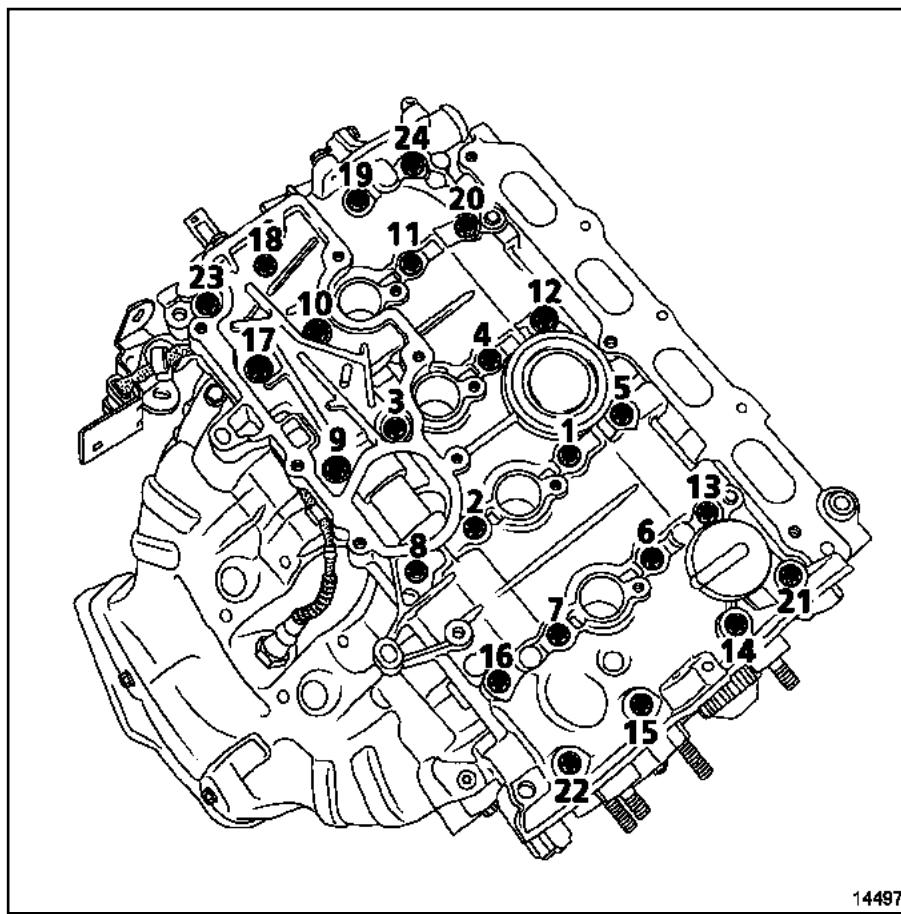
An excess of sealing product in the application
cation may cause an overflow of said product
during the tightening of the parts. The product-fluid
mixture can cause degradation of some elements
(engine, radiator orache, ...).



14517
14517

Apply, using a roller (gotelé type)
LOCTITE 518

Remove the **LOCTITE 518** from the work on the
tracks (**4**) of the six supports of the butt.



14497

14497

Fit the cylinder head cover.

Tighten in order and pairs:

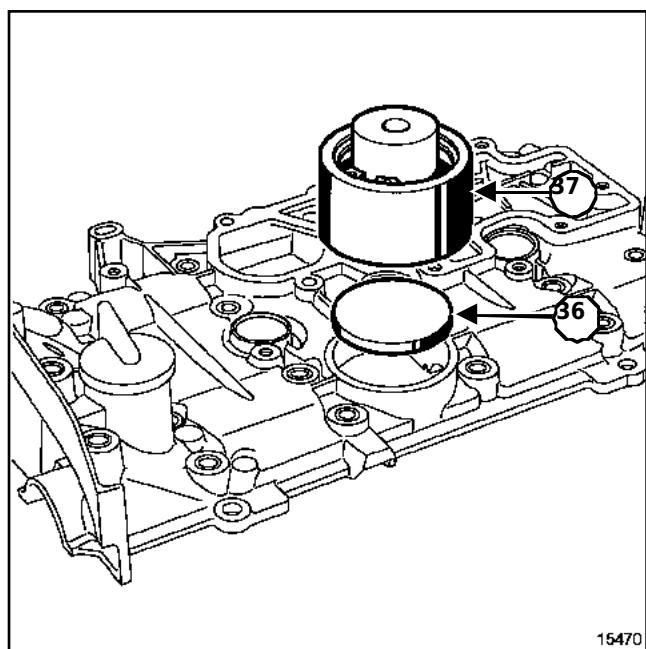
-the bolts of the cylinder head cover 13 - 20 - 22 - 23

a **0.8 daN.m** ,

-the **bolts of the cylinder head cover from 1 to 12, from 14 to 19 and 21 - 24** (1.5 daN.m) .

Loosen the cylinder head cover bolts 13 - 20 - 22-23.

Tighten the cover screws in order and to torque cylinder head 13 - 20 -22 -23 (1.5 daN.m) .



15470

15470

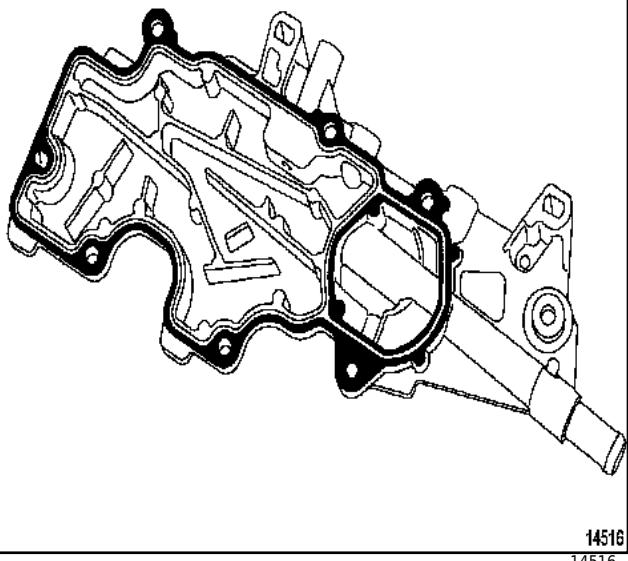
Fit the pad (36) of the cylinder head cover by means of the tool (Mot. 1503) (37).

NOTE:

The oil decanter gasket drawings must be clean, dry and grease-free (avoid fingerprints),

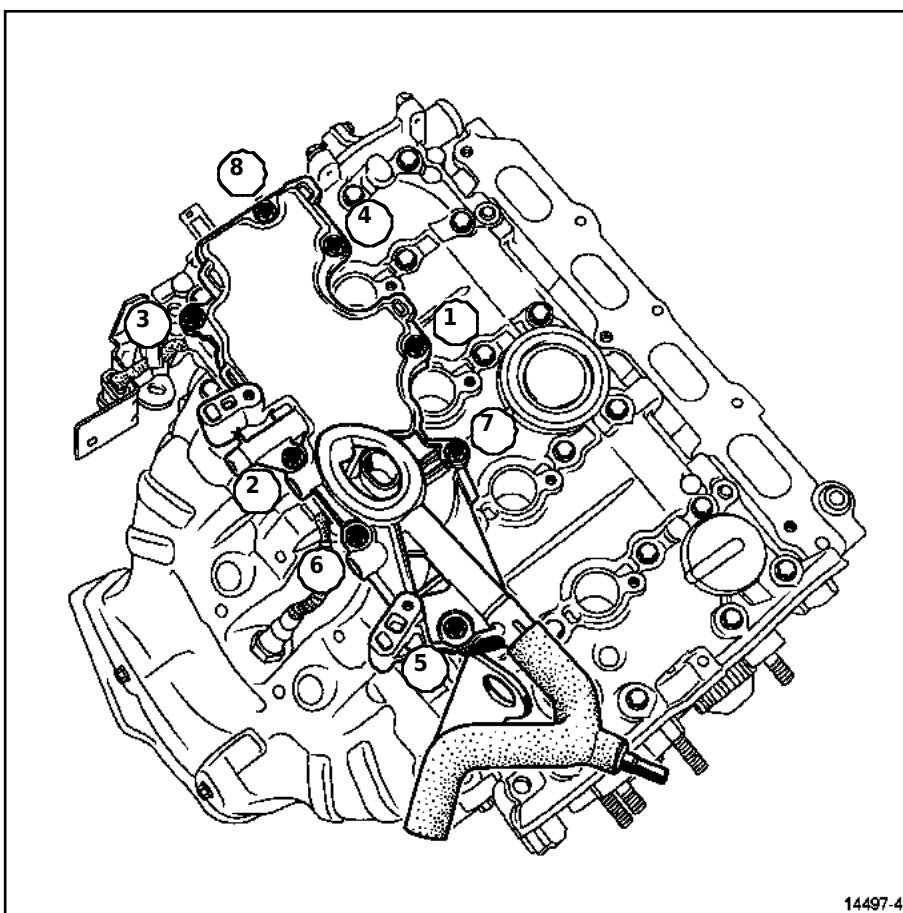
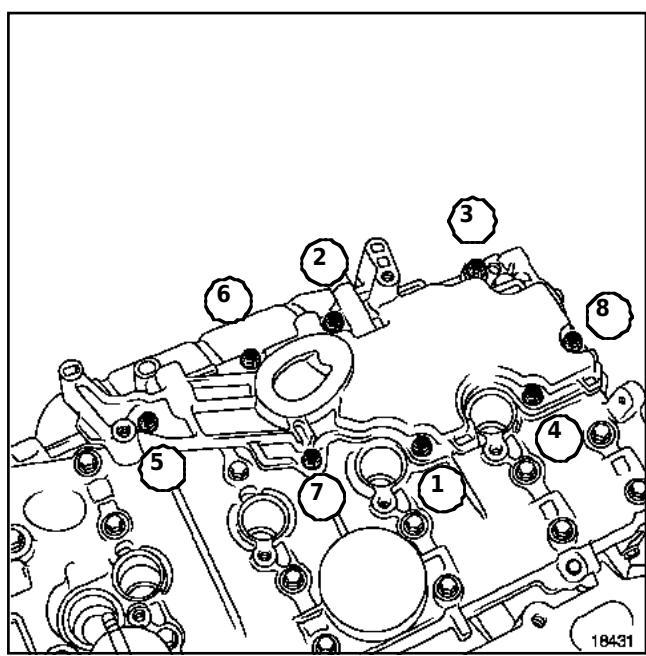
NOTE:

An excess of sealing product in the application may cause an overflow of said product during the tightening of the parts. The product-fluid mixture can cause degradation of some elements (engine, radiator, ...).



Apply, using a roller (gotelé type)

LOCTITE 518

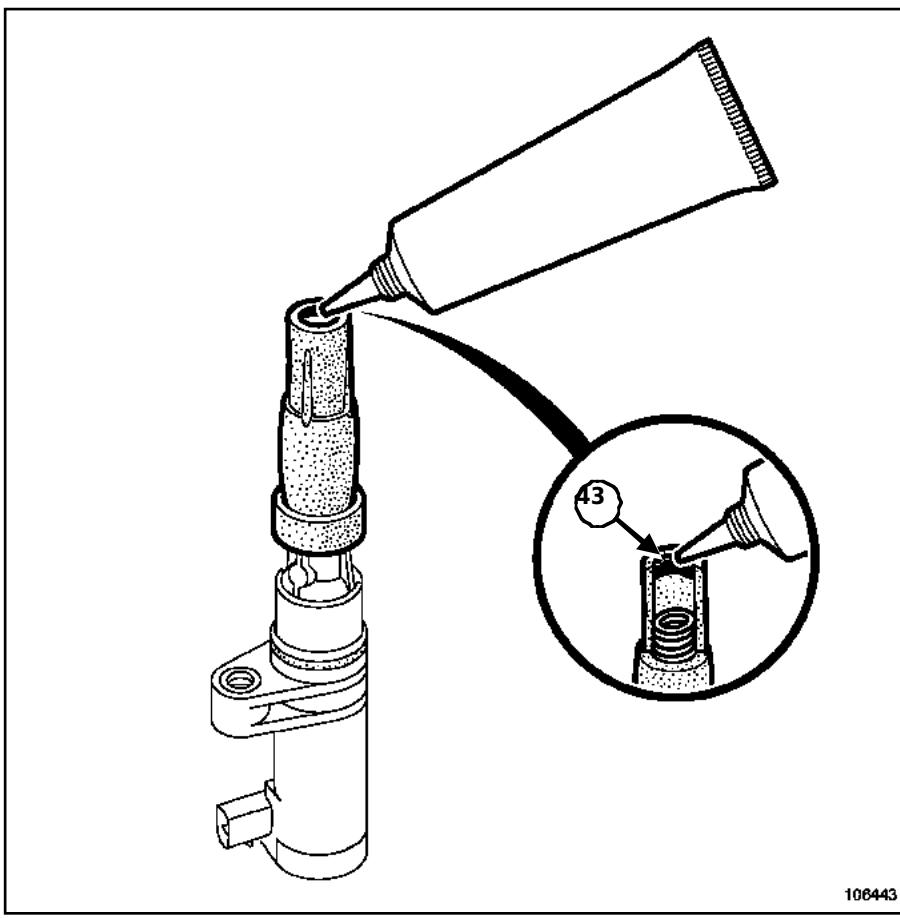


Place the oil decanter.

Tighten in order and to torque:

-the new screws of the oil decanter in
the holes through which the
tap (1.5 daN.m),

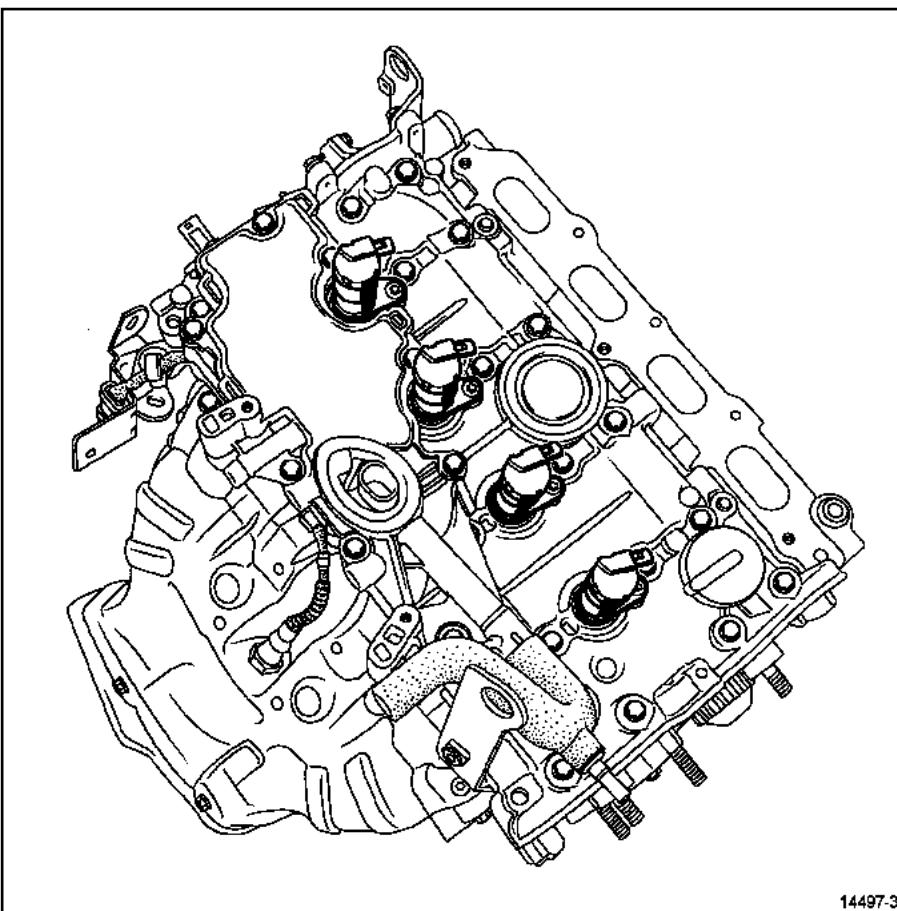
-the new or original screws of the decanter
of oil in the holes through which the
sado the tap (1 daN.m).



106443

106443

Put a string on the four ignition coils
(43) **FLUORATED GREASE (REFERENCE**
8200 168 855)inside the high voltage cap.



14497-3
14497-3

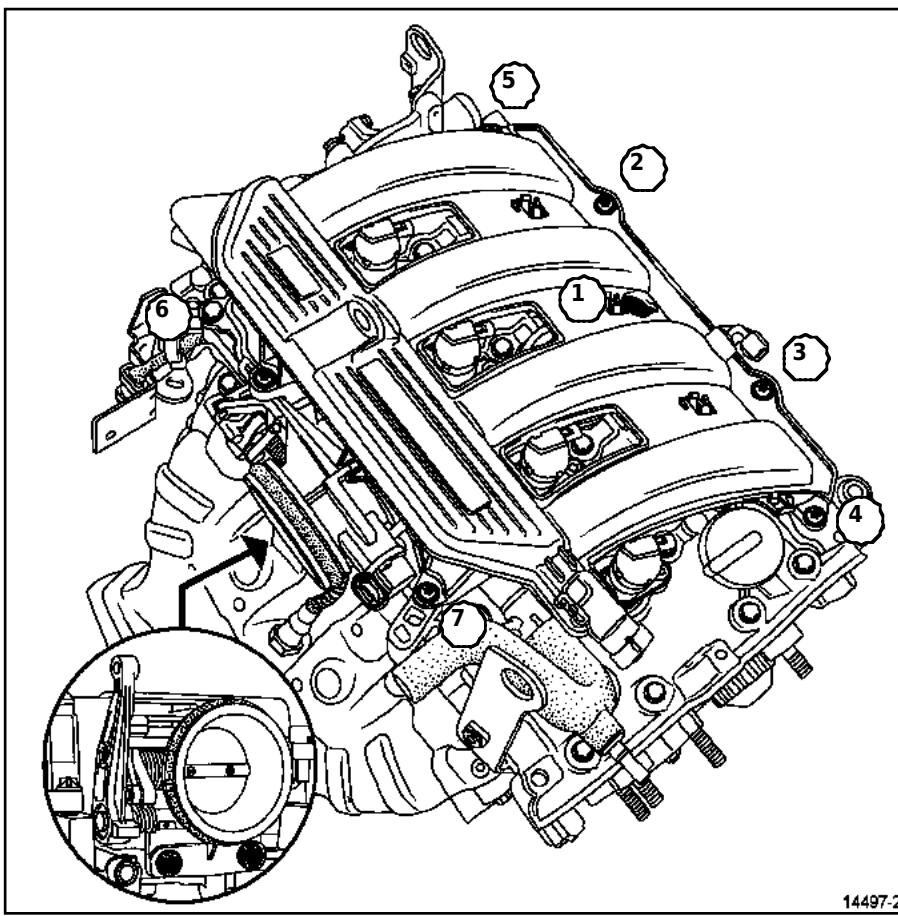
Fit the spark plugs.

Torque the **spark plugs** **(2.5 to 3 daN.m)** with help from the spark plug key case (Ele. 1382).

Fit the ignition coils.

Tighten the **input coil screws** **yielded** **(1.5 daN.m)**.

Systematically replace all seal seals.quality of the admission dealer.



14497-2

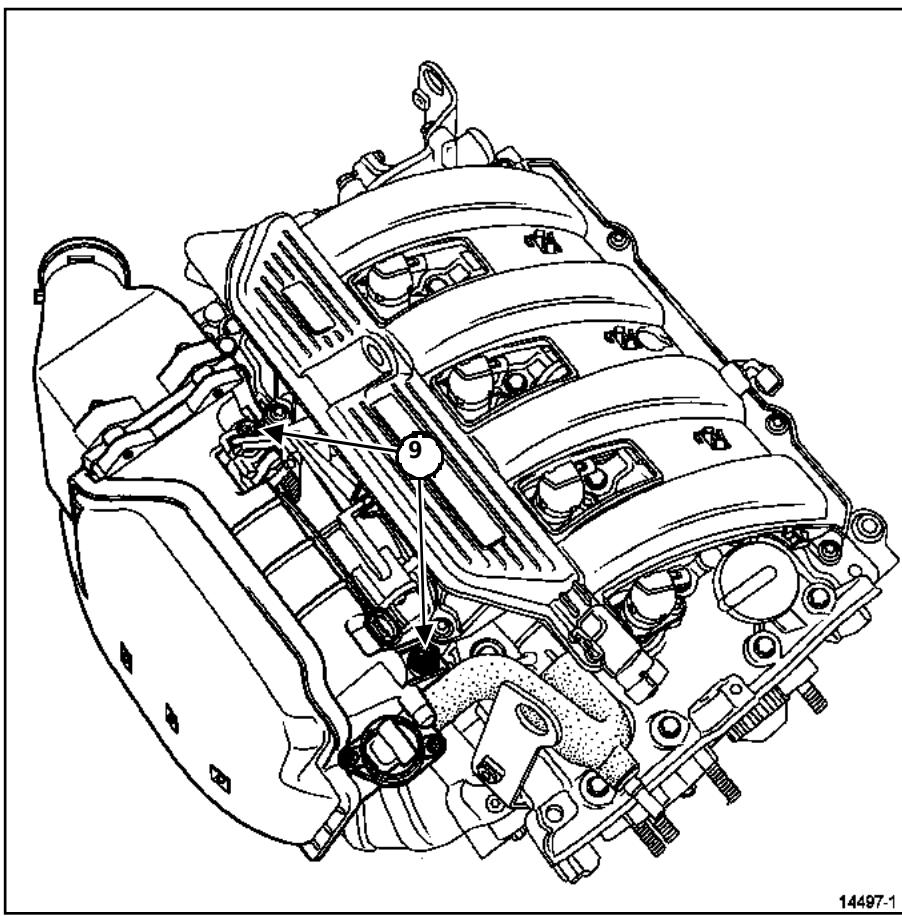
14497-2

Place the intake manifold.

Tighten in the order and to the torque the **screws of the
intake manifold** (**0.9 daN.m**) .

Fit the butterfly box equipped with new
gasketsyou.

Torque tighten the **butterfly box screws (1,
3 daN.m)** .



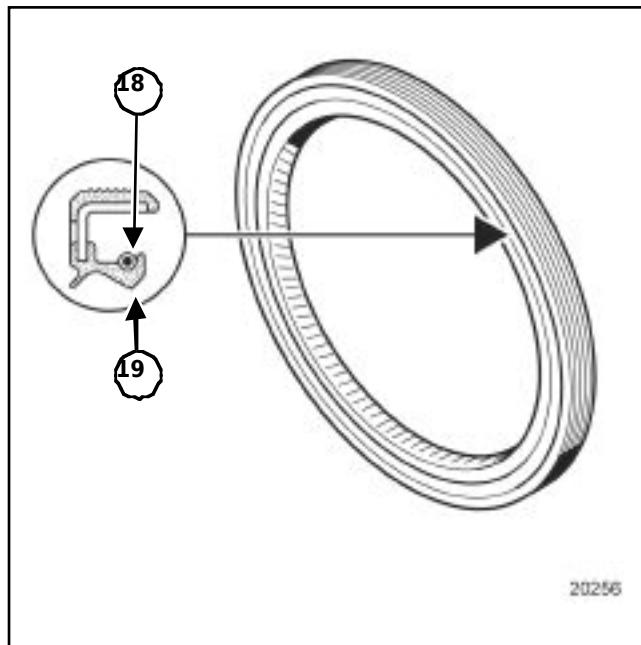
14497-1
14497-1

Fit the air filter housing.

**Tighten the filter housing bolts to torque
of area (0.9 daNm) (9).**

**Placement of the watertight joints of
the Camshafts**

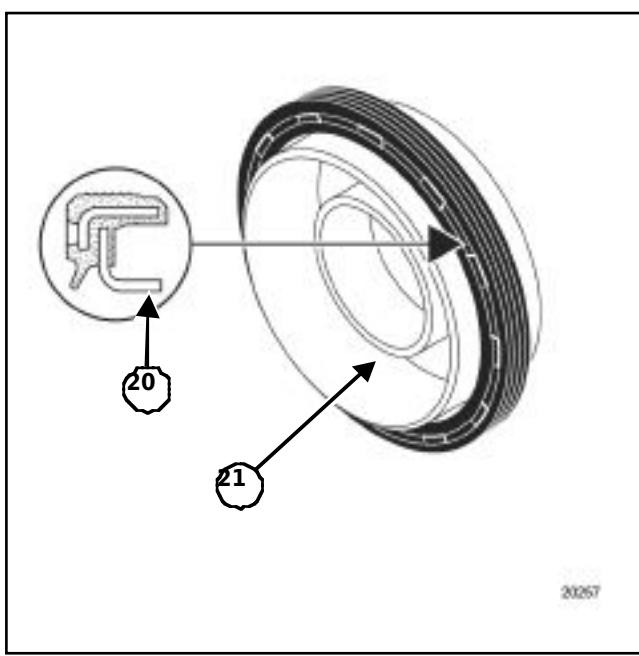
There are two versions of elastomer gaskets
oftightness for camshafts that are easy-identifiable
mind.



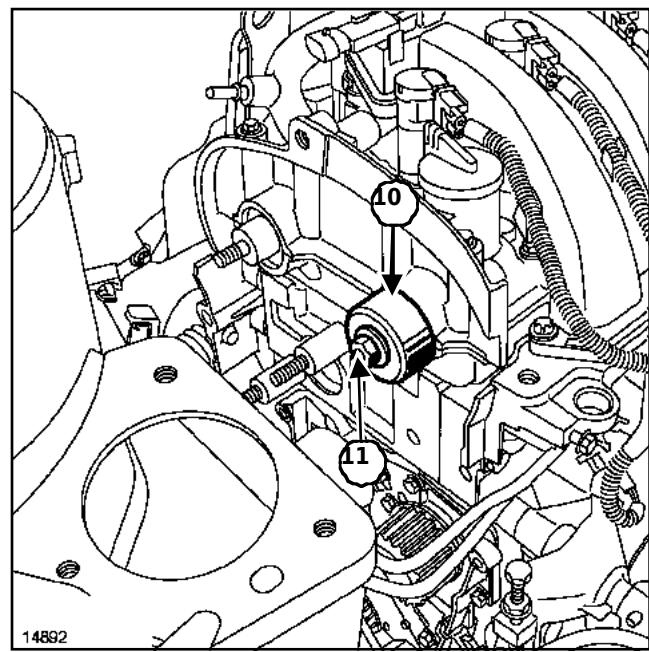
20256

20256

The first version; the elastomer seal is
equippedwith a spring (18) and a sealing lip 19



The second version; the elastomer seal is equipped with a flat sealing lip (20) and with a protector (21) (which also serves for the gasket mounting on engine).



Fit the sealing gaskets with the help of the (Mot. 1491) (10) and the old nuts (11).

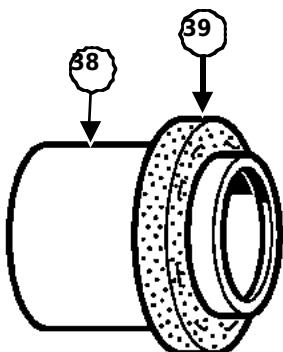
NOTE:

The two versions of the sealing gasket can be used on the same engine. They are not exchangeable. There are that replace imperatively the old gasket for the identical version, except in case of replacing one or more camshafts.

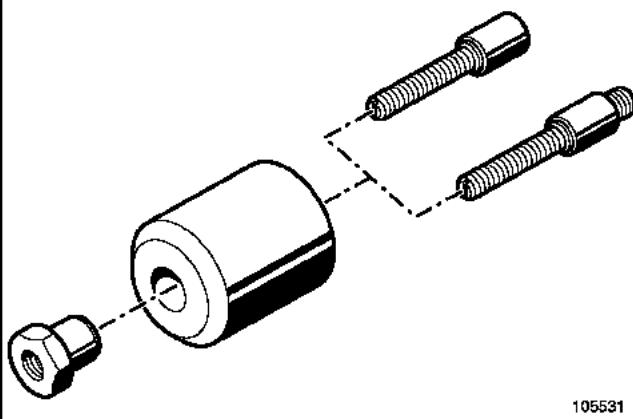
a - Placement of the first version of the gasketscamshaft sealing

Place the sealing gaskets on the shaft levas.

**b - Placement of the second version of the
joints camshaft sealing**



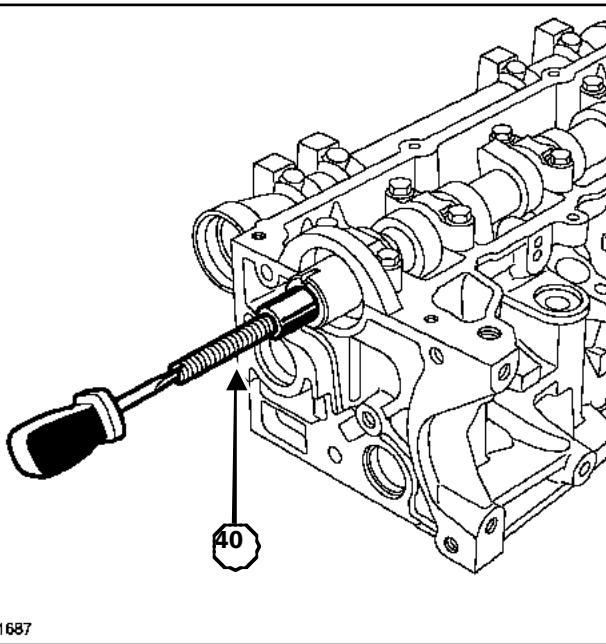
18687
18687



105531
105531

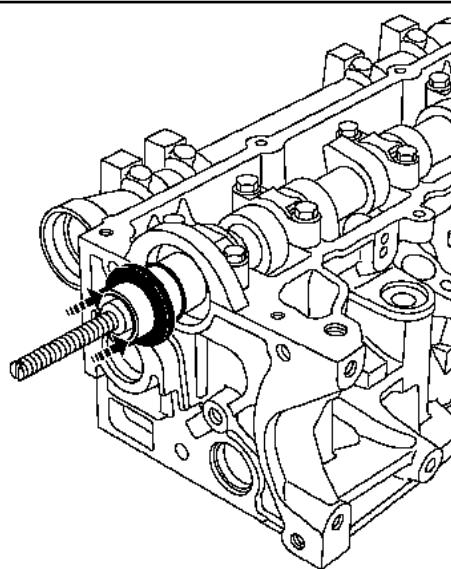
ATTENTION

Take imperatively the gasket by the protector(38) during handling, since this type of board is very FRAGILE. It is strictly forbidden it should be possible to touch the elastomer seal (39) to avoid any oil leaks once it is in place.the sealing gasket on the engine.



21687
21687

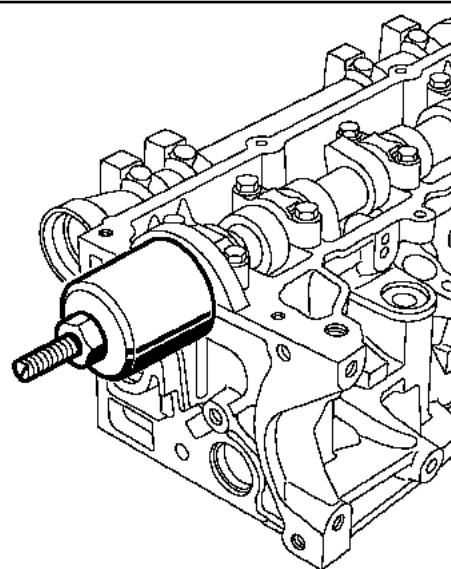
Screw the stud (40) of (Mot. 1632) into the
shaftbowl of cams.



21687-1

21687-1

Put the protector equipped with
the watertight joint (taking care to
do not touch the gasket).

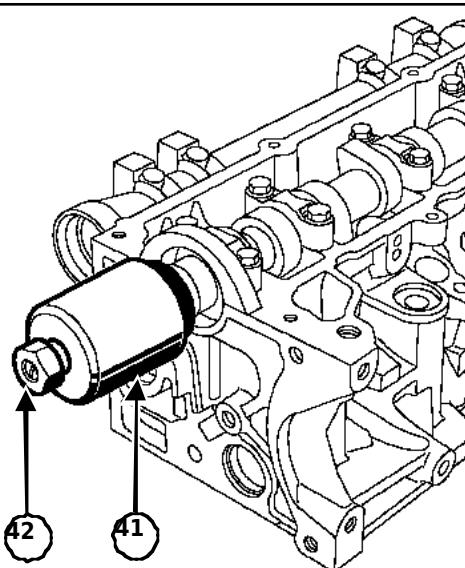


21687-3

21687-3

Screw in the shoulder nut until it clicks.
I touch the bell with the butt.

Remove the nut, the bell, the protector and the
rodthreaded.



21687-2

21687-2 Fit the bell (41) and the flange
nut (42)del (Mot. 1632).

**II - REPLACEMENT OF
THE DISTRIBUTION**

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730 or 732 or 750 - K4M, and 700 or 701 or 704 or 706708 o 709 o 710 o 711 o 712 o 714 o 720 o 724 o 734 o 740 o 742 o 743 o 744 o 745 o 748 o 750 o 752 or 753

ATTENTION

Replace imperatively the nuts the camshaft pulleys, camshaft bolt crankshaft accessory pulley.

ATTENTION

Degrease imperatively:

- the end of the crankshaft,
- the inside diameter and the bearing faces of the timing pinion,
- the support faces of the accessory pulley of the crankshaft,
- the ends of the camshafts (distributor side)button),
- the internal diameters and the bearing faces of camshaft pulleys.

This is to avoid skidding between:

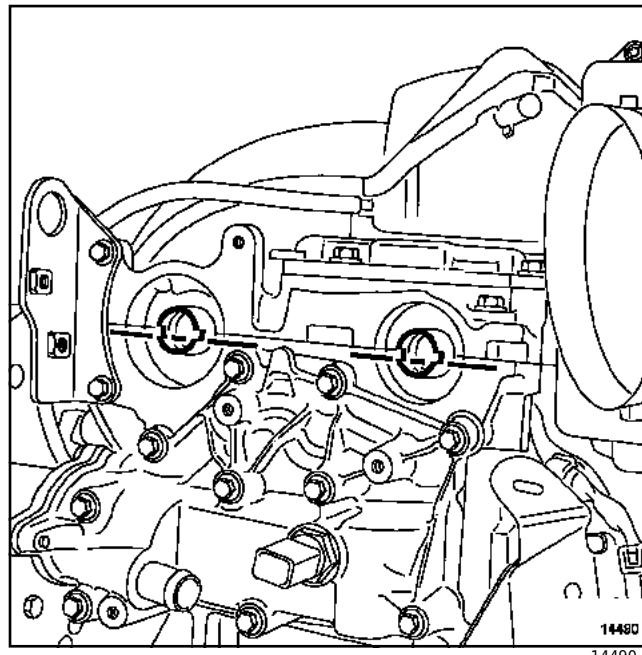
- the crankshaft,
- the camshaft pulleys.

This skidding causes the destruction of the engine.

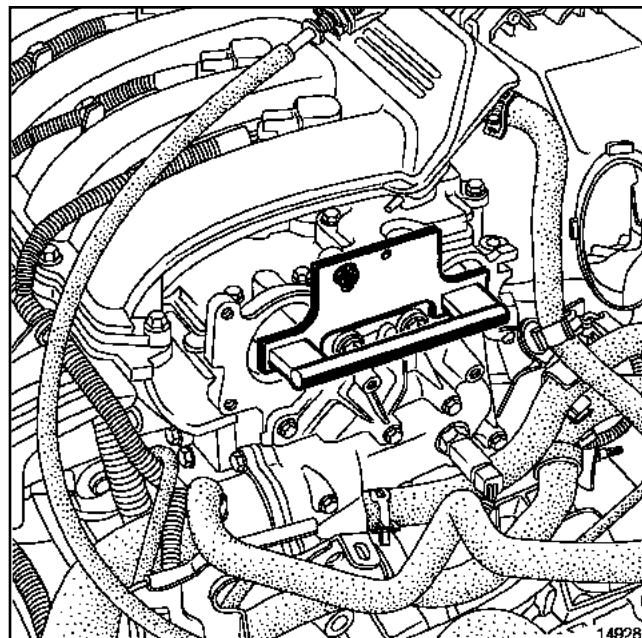
ATTENTION

Never turn the engine in the opposite direction to operation.

Fit the camshaft pulleys and the an-old nuts by tightening them to a torque of **1.5 daN.mas** MAXIMUM

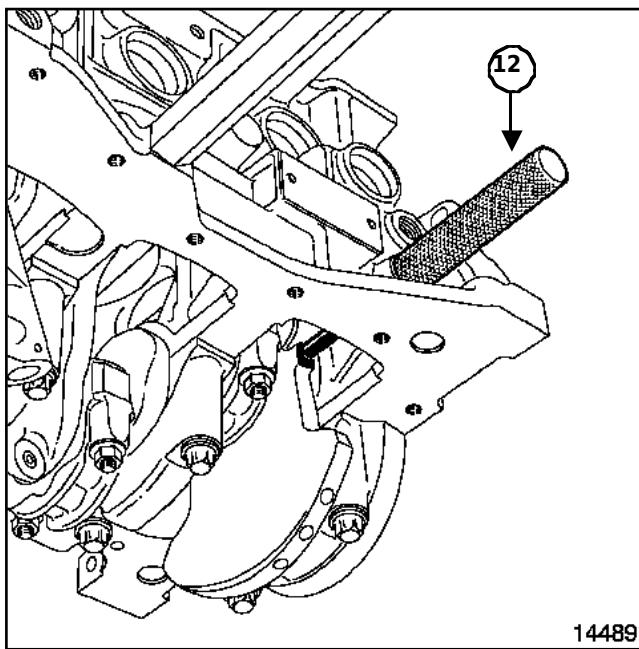


Position the camshaft grooves horizontally
zontally and off-center down by turning the camshafts with the help of (Mot. 799-01) if it is
necessary.



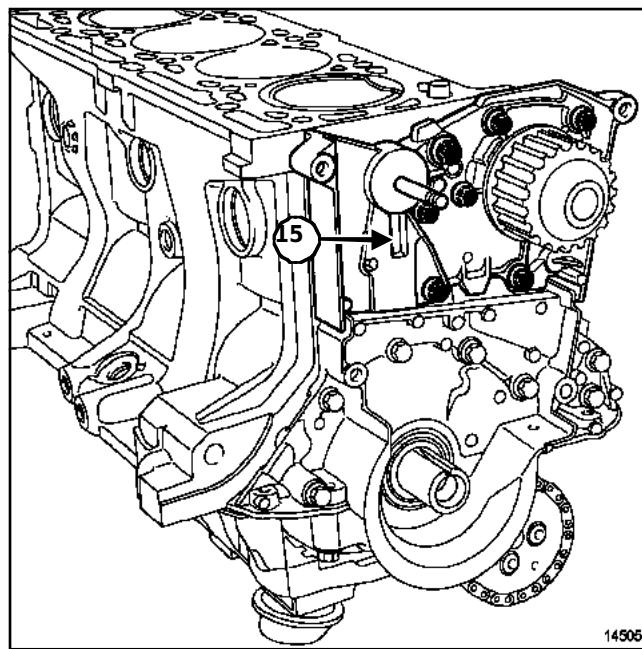
14928 Fit the (Mot. 1496), fixing it at the
end of the Camshafts.

Remove the old nuts from the shaft pulleys.camshaft bolts
and replace them with new nuts
(no lock nuts, game **0.5 to 1 mm** in-between nuts
and pulleys).



14489
14489

Check that the crankshaft is well supported on the top dead center pin (Mot. 1489) (**12**) and the groove (**13**) in crankshaft must be facing above.

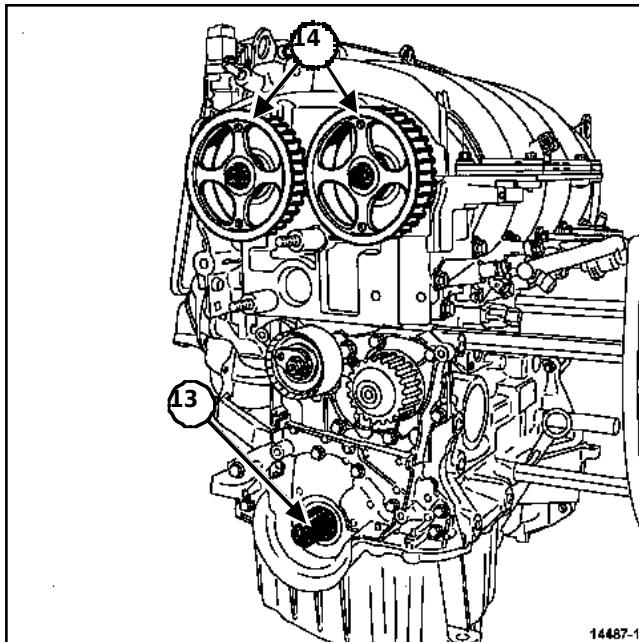


14505
14505

Position the tensioner roller by positioning the spur of the tensioner roller in groove (**15**).

Fit the crankshaft timing pinion.

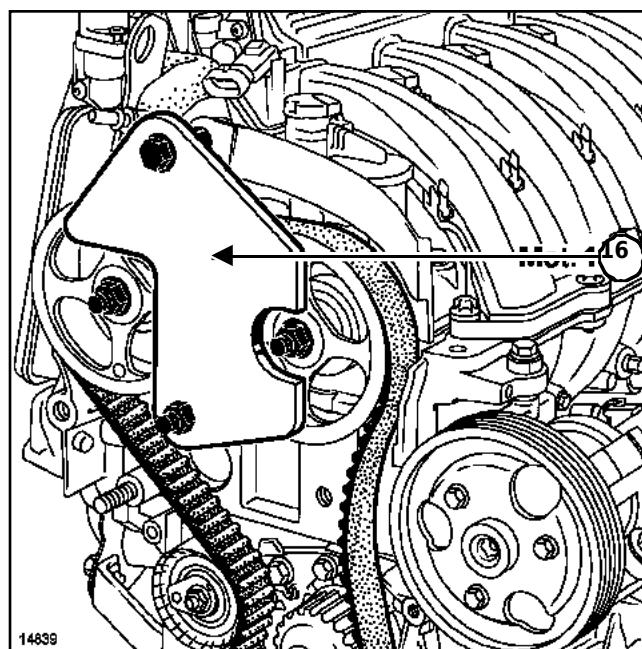
Place the timing belt on the pulleys of the camshafts (without moving the pulleys of the camshafts cam).



14487-1

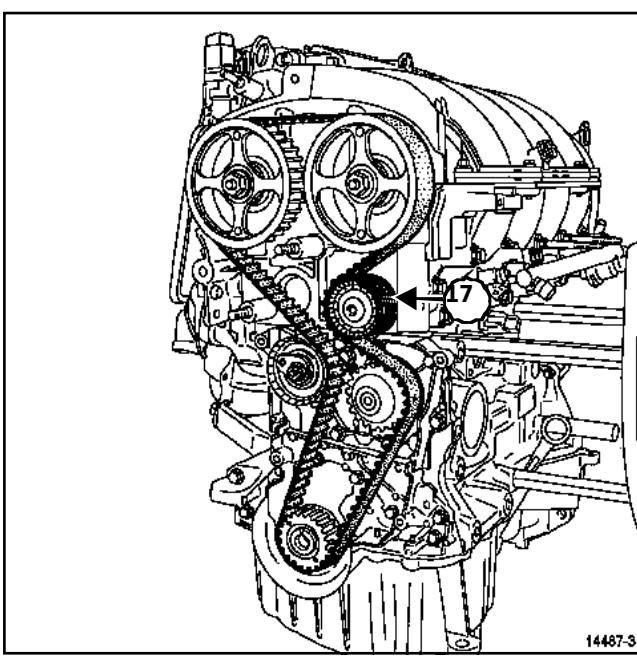
14487-1 Position the RENAULT logo (**14**) engraved on the camshaft pulley arms vertically and up.

mind and up.



14839
14839

Fit the locking tool (**16**) of the idler pulley camshafts (Mot. 1490-01).



14487-3

Fit the distribution winder roller (**17**).

Torque tighten the **screw of the winding roller**.

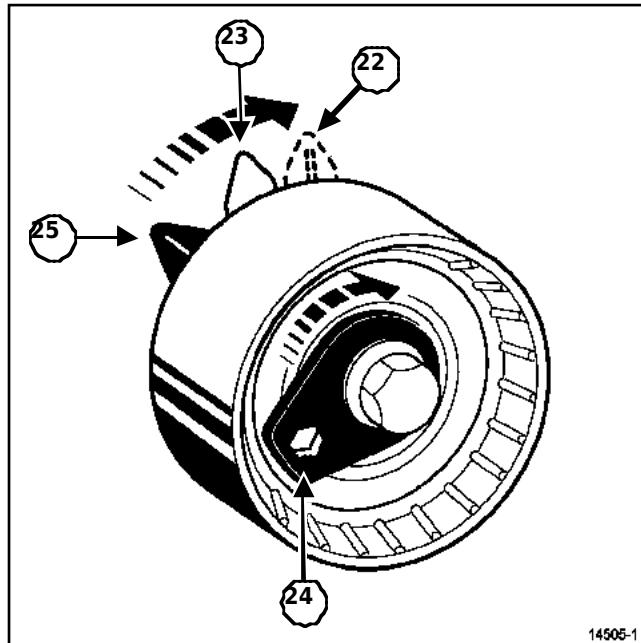
distribution (4.5 daN.m) .

Fit the crankshaft accessory pulley equipped
a new screw (without locking the screw, play
of **2 to 3 mm** between the screw and the pulley).

1 - Timing belt tension

There are two versions of the timing tensioner roller.

a - First version



14505-1

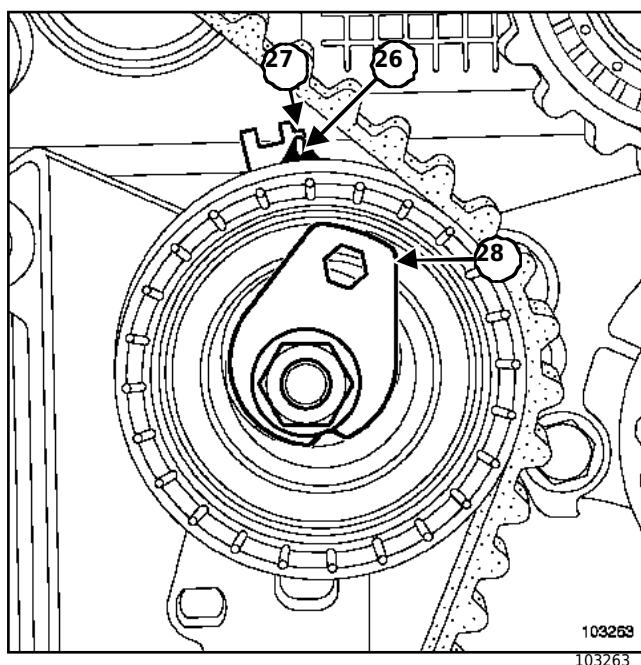
NOTE:

Position (**25**) corresponds to the moving index in
repose.

Make the moving index (**22**) protrude from the rollertensioner **7 to 8 mm** with respect to the fixed index (**23**) by turning

the eccentric clockwise me-
using a **6mm** hex wrench at (**24**).

b - Second version



Bring the moving index (26) in front of the notch (27), turning the eccentric (28) clockwise

clockwise using a 6- inch hex wrench

mm

Torque tighten the nut of the timing tensioner pulley.
tion **0.7 daN.m .**

Remove the shaft pulley locking tool
cam (Mot. 1490-01).

NOTE:

Check that the nuts of the pulleys of the camshafts do not make contact with their respective pulleys. Also, push from Time in when the camshaft pulleys against camshafts.

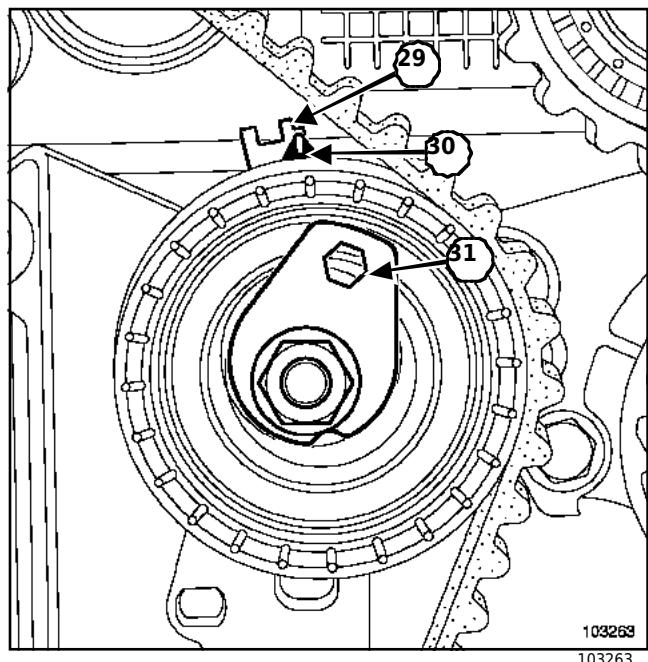
Perform a six-turn rotation of the distributionthe exhaust camshaft pulley with help from (Mot. 799-01).

c - First version

Loosen the roller nut a maximum of one turn timing tensioner while holding the eccentrica using a **6mm** hex wrench .

Align the moving index (22) with the fixed index (23)
turning the eccentric counterclockwise
clockwise.

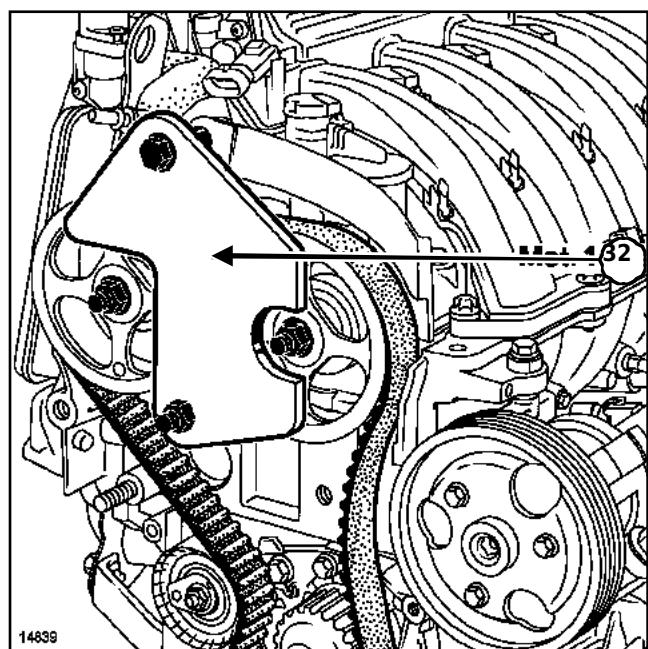
d - Second version



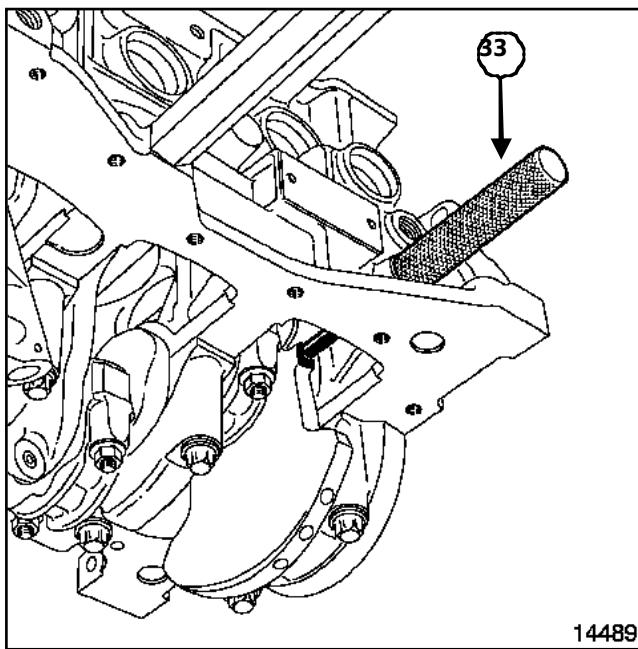
Verify that the moving index (30) is in front of the notch (29), if not loosen a maximum of one turn the timing tensioner roller nut holding at the same time the eccentric by means of a hexagonal wrench of **6 mm .**

Progressively bring the moving index (30) against the notch (29) by turning the eccentric (31) in the direction clockwise.

Torque tighten the **nut of the timing tensioner pulley. button (2.7 daN.m) .**



Fit the locking tool for the shaft pulleys.
les de levas (Mot. 1490-01) (**32**).



ATTENTION

Check that the crankshaft rests on the Top Dead Center (Mot. 1489) (**33**).

Tighten the **screw of the posi-read** of crankshaft accessories ($4 \text{ daNm} + 115^\circ 15^\circ$) (crankshaft resting on point pinton dead).

Tighten to torque and angularly the position **nut**.

read intake camshafts $(3 \text{ daN.m} + 84^\circ 4^\circ)$

Tighten to torque and angularly the position **nut**.

read exhaust camshafts $(3 \text{ daN.m} + 84^\circ 4^\circ)$

Extract:

-the camshaft setting tool (Mot.1496),

-the locking tool for the axle shaft pulleys-vas (Mot. 1490-01),

-the top dead center pin (Mot. 1489).

2 - Checking the timing of the timing belt

a - Tension control

Turn the crankshaft two times in a clockwise direction. distribution side, and before the end of the two laps:

-screw the top dead center pin (Mot. 1489) on the engine block,

-Raise the crankshaft slowly and without jerks until rest it on the upper neutral pin.

rior. (Mot. 1489)

Remove top dead center pin.

Check that the indexes of the timing tensioner roller are aligned, if not, redo the tensionloosening the nut of the eccentric of the tensioner roller.

Correctly align the moving index with respect to the index it says fixed or to the notch.

Torque tighten the **nut of the timing tensioner pulley. button** (2.7 daN.m) .

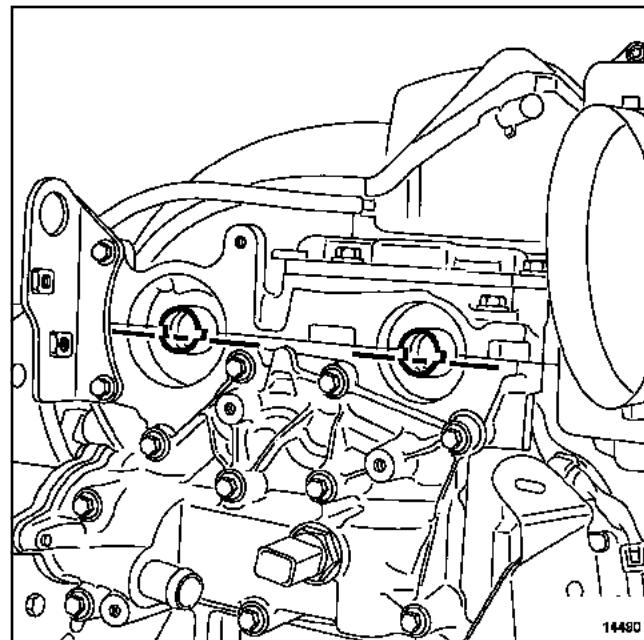
b - Draft control

Make sure the correct position of the indexes on the distribution tensioner roller before carrying out

control of the draft of the distribution.

Screw in the top dead center pin (Mot. 1489) on the engine block.

Bring the crankshaft slowly and smoothly to rest it on the top dead center pin.



Fit (without forcing) the tool for setting the shafts cams (Mot. 1496) (the grooves at the end of the camshafts must be horizontal and lowered drawn down).

NOTE:

If the camshaft setting tool is not introduced, the draft of the distribution must be redone. button and tension.

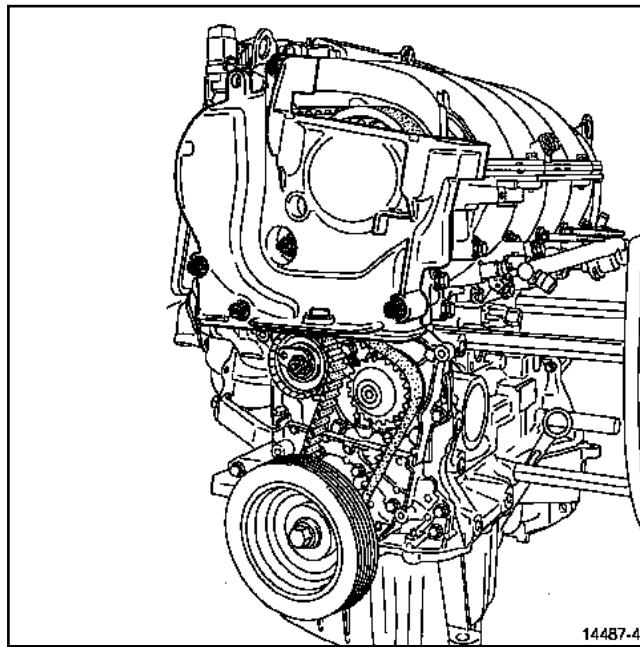
ENGINE AND LOWER ENGINE ASSEMBLY

Timing - cylinder head: Refit

10A

Fit the cap of the upper neutral pin prior applying a point of **RHODORSEAL 5661** in the threaded hole.

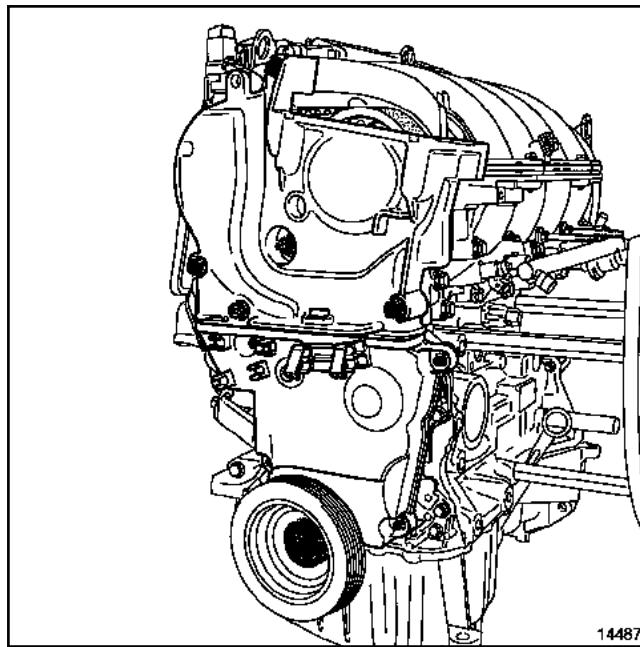
Torque tighten the **knit dowel plug upper dead (2 daN.m)**.



14487-4

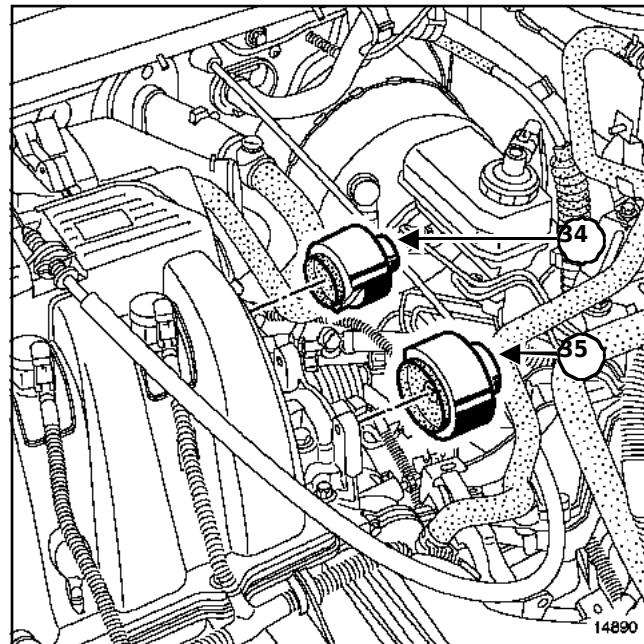
Fit the upper timing cover.

Tighten the screws and nuts of the sump sump to torque. lower distribution (4.1 daN.m).



14487

Fit the lower timing cover.



14890 Place the new sealing plugs in the end of camshafts:

-use for the intake camshaft (Mot.35)

-use for the exhaust camshaft (Mot. 34)

Fit the engine lifting rings.

Tighten the pairs:

- the screws of the lifting eye of the engine (flywheel side) (1 daN.m),
- the screw of the engine lifting ring tor (distribution side) (3.5 daN.m).

ENGINE AND LOWER ENGINE ASSEMBLY

Engine: Dress

10A

Essential specialized tooling		
Against. 792-03	Board medium of motor for stand DESVIL	
Against. 1505	Apparatus to control the tension of the cords Areas (frequency meter)	
Against. 1715	Apparatus to control the tension of the cords Areas (frequency meter)	
Against. 1638	Useful for tightening the cord accessories area	

Tightening torques m		
bottom screw from fixed- multi-media support function		2.1 daN.m
fixing screws multifunction stand		4.4 daN.m
tensioner roller bolt automatic		4 daN.m
compressor screws of conditioner air		2.1 daN.m
alternator bolts		2.1 daN.m
fixing screws tensioner roller		3 daN.m

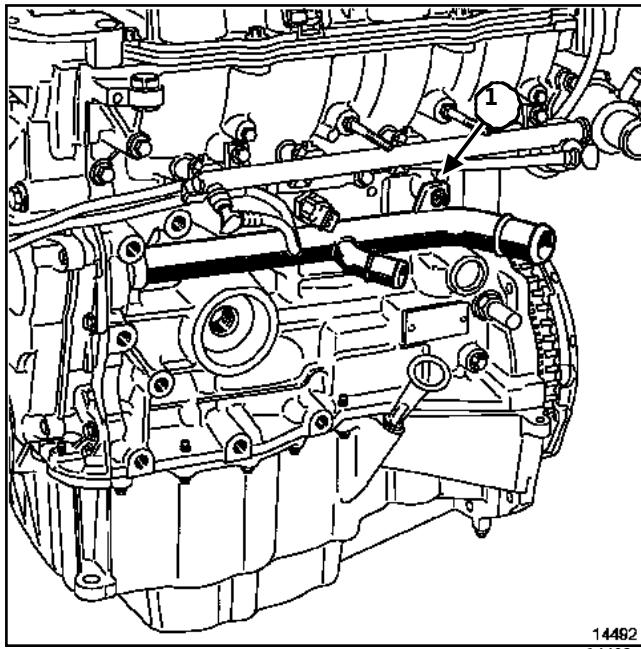
Tightening torques m		
water pipe screw pump inlet of water		2.2 daN.m
bottom screw from fixed- multi-media support function		2.1 daN.m
fixing screws multifunction stand		4.4 daN.m
screw from fixation of multifunction stand		11 daN.m
roller screws automatic sor		2.1 daN.m
roller screw wind-labor		2.1 daN.m
fixing screws compressor of the conditioning air cation		2.1 daN.m
fixing screws alternator		2.1 daN.m
fixing screws bomb from address assisted		2.1 daN.m
fixing screws tensioner roller		2.1 daN.m
water pipe screw pump inlet of water		2.2 daN.m

Extract the motor from the bracket (Mot. 792-03).

Remove the motor terminals.

3 .

K4, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730
or 732 or 750 - K4M, and 700 or 701 or 704 or 706708
o 709 o 710 o 711 o 712 o 714 o 720 o 724 o 734 o 740
o 742 o 743 o 744 o 745 o 748 o 750 o 752 or 753

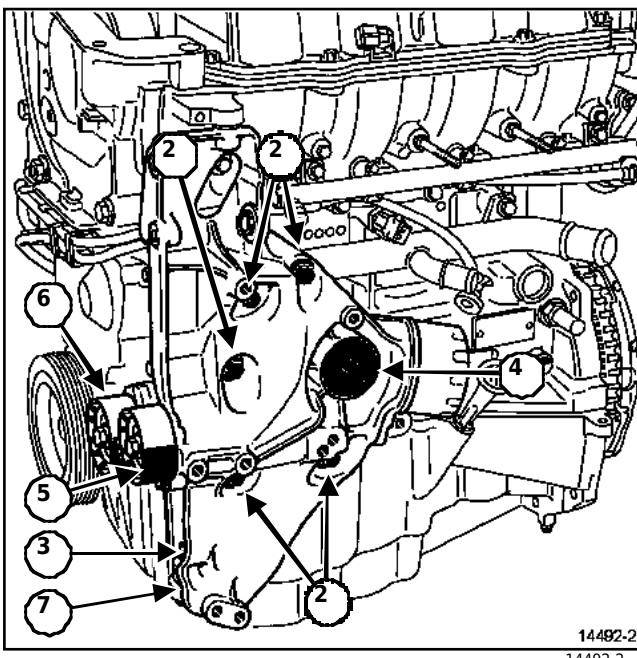


14492

14492

Place the inlet water pipe of the fuel pumpwater fitted
with a new gasket.

**Tighten the screw of the inlet water pipe to torque.
da of the water pump (2.2 daN.m) (1).**



-the **lower fixing screw of the multi-bracket function** (2.1 daN.m) (3),

-the **fixing screws of the multifunction bracket** (4.4 daN.m) (2)

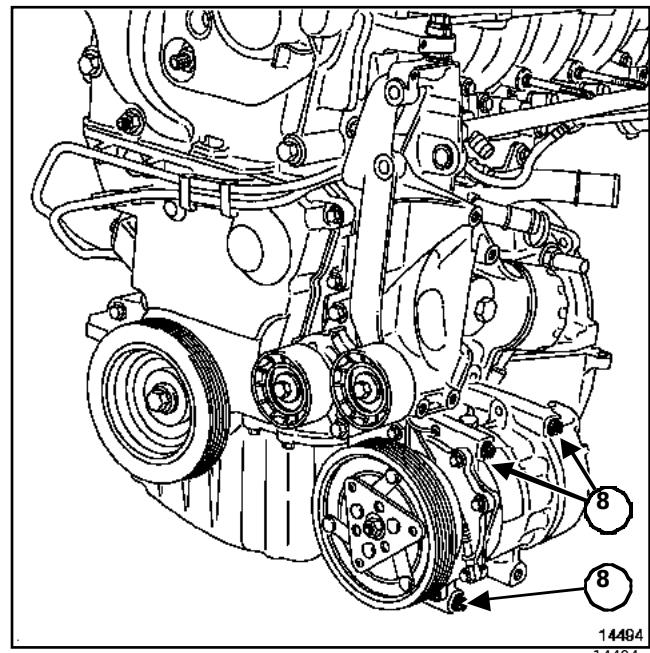
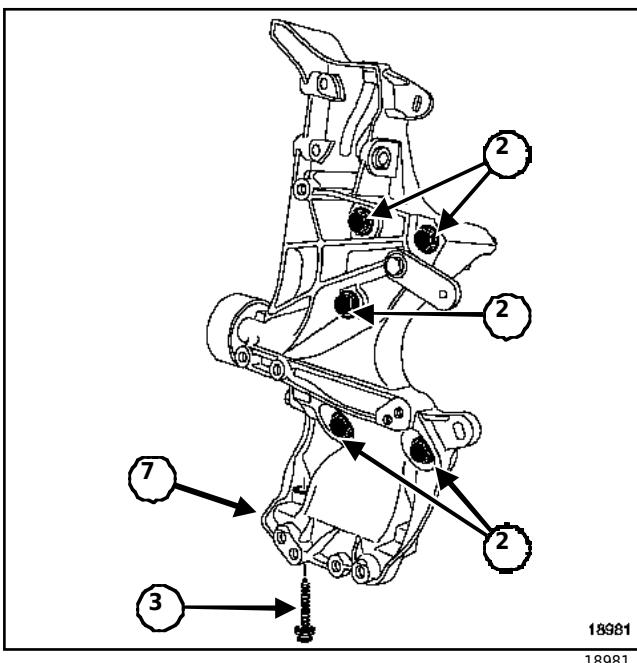
-the **multi-function bracket fixing screw** (11 daN.m) (4).

Fit the automatic tensioner roller (6).

Tighten the **tensioner pulley bolts automatic** (2.1 daN.m) .

Fit the winding roller. (5)

Tighten the pair **winding roller screw (2, 1 and N.m)** .



Install the air conditioner compressor.

Tighten the compressor fixing bolts to torque.
air conditioner sor (2.1 daN.m) (8).

Put:

-the multifunction accessory support equipped with the new gasket according to version (checking that the multifunction stand is well supported on the lower case at (7)),

-the fixing screws (2) of the multifunction support without blocking them,

-depending on the version, the lower screw (3) for fixing the multifunction support without blocking it,

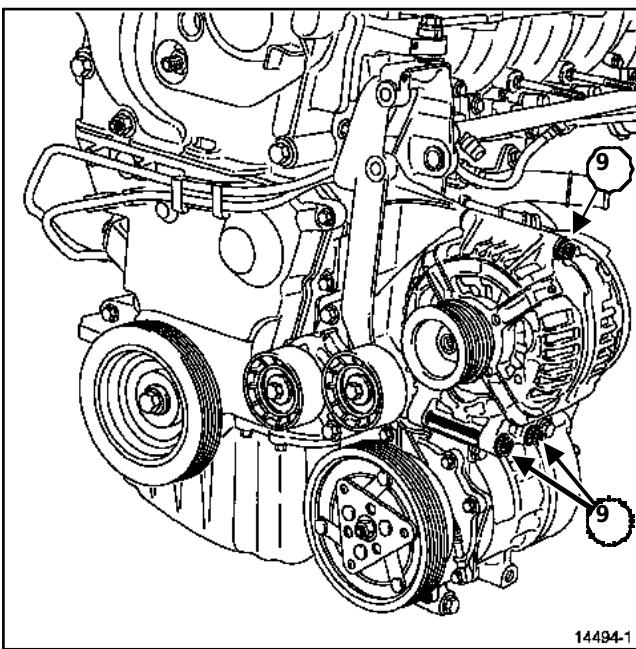
-depending on the version, the bracket fixing screw (4) without blocking it and equipped with the new gasket.

Tighten the pairs:

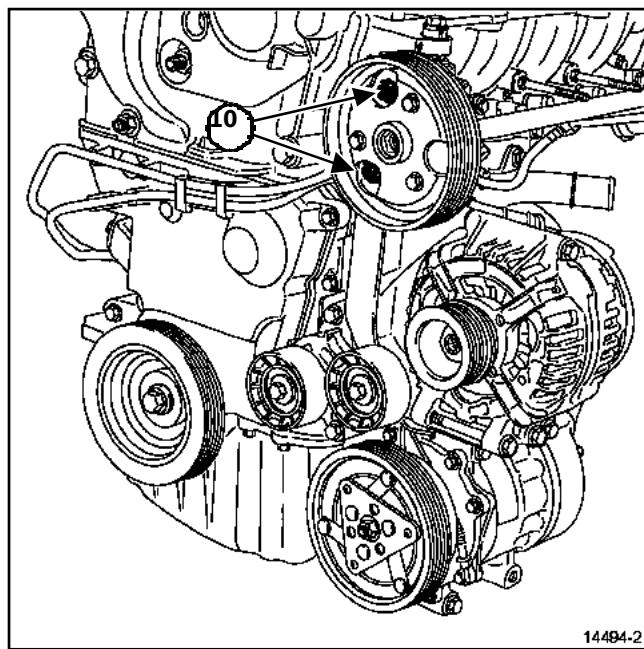
ENGINE AND LOWER ENGINE ASSEMBLY

Engine: Dress

10A



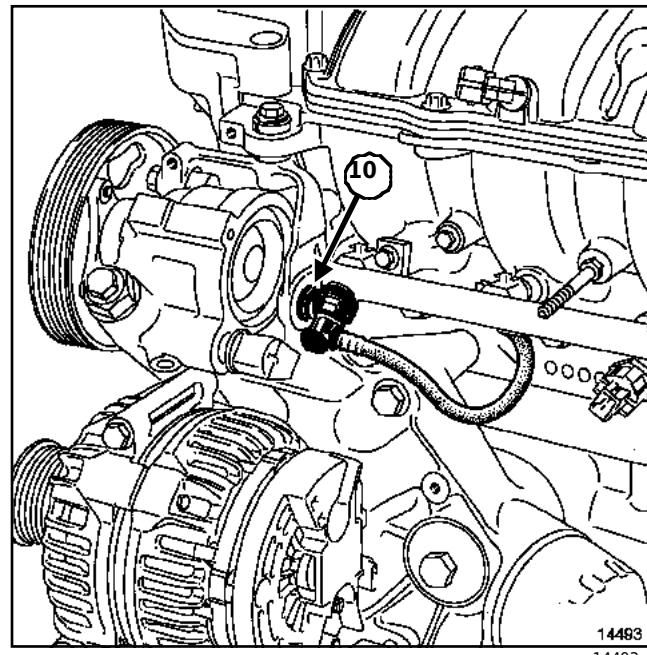
14494-1



14494-2

Fit the alternator.

**Tighten the alternator fixing bolts to torque.
ache (2.1 daN.m) (9).**

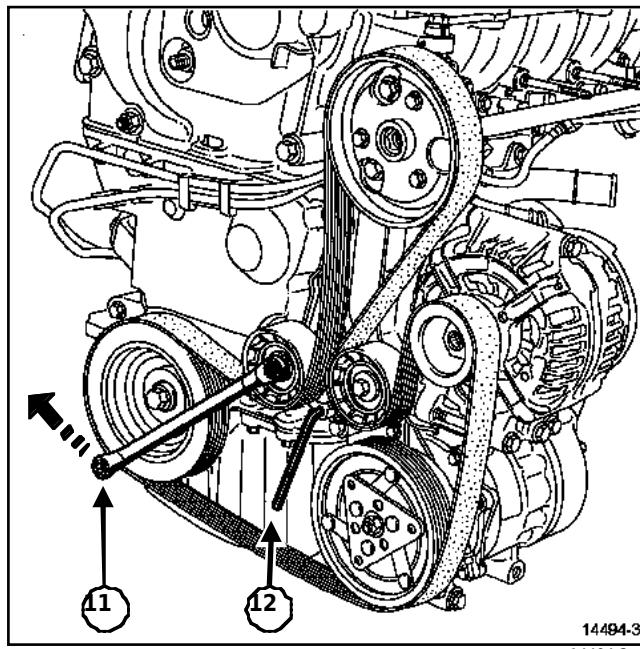


14493

Install the power steering pump.

**Tighten the pump fixing bolts to torque
power steering (2.1 daN.m) (10).**

a - Replacing the accessory strap for a motor equipped with air conditioner

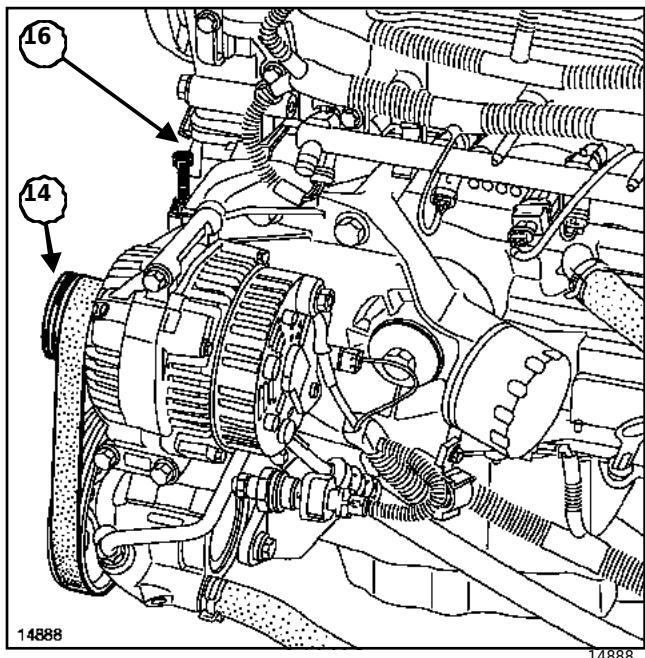


14494-3

Pivot the key (11) in the direction of the arrow to loosen the tensioner roller.

Lock the automatic drive belt tensioner.
using a **6mm** Hex Wrench (12).

b - Replacing the accessory strap for a motor without air conditioner

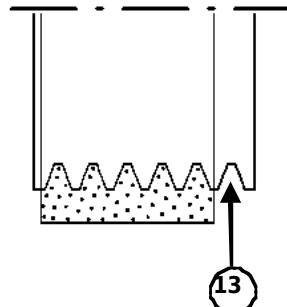


14888

14888

ATTENTION

It is imperative to check that the outer tooth (14) of the pulleys is free when placed the belt.



23160

23160

ATTENTION

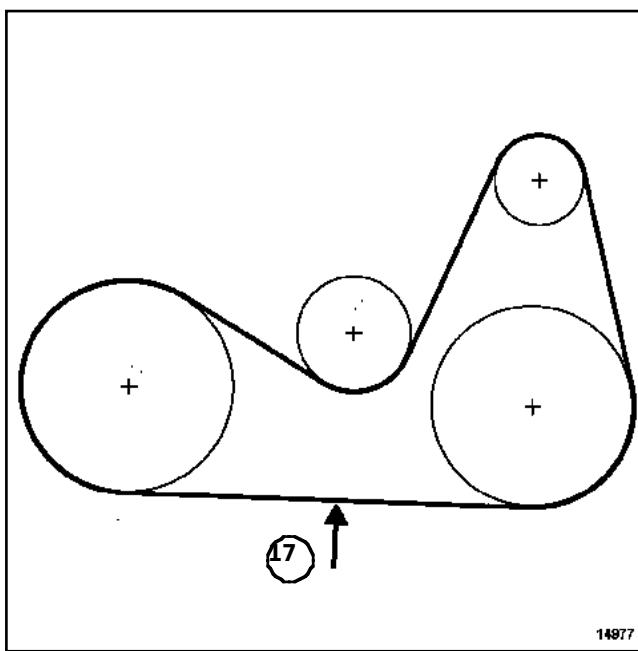
It is imperative to check that the inner tooth(13) of the pulleys is free when placed the belt.

Attach the accessory strap.

Remove the **6mm** hexagon wrench (12).

Turn the crankshaft two times to position it correctly.mind the accessory strap.

4 -



Attach the accessory strap.

Adjust the belt tension by screwing in the screw (16) until obtaining a voltage between

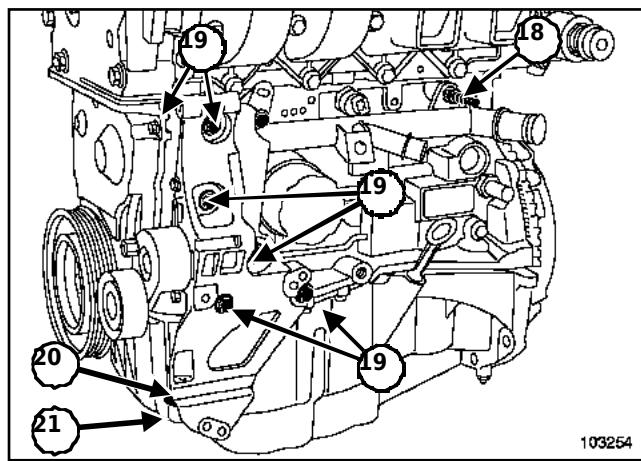
200 and 207 Hz at the measuring point (17) with help del (Mot. 1505) del (Mot. 1715).

Tighten the roller fixing bolts to torque tensor (2,1 daN.m)

Turn the crankshaft two times to position it correctly.
mind the accessory strap.

Check that the voltage is between **200 and 207 Hz** at the measurement point (17), if not, readjust the voltage using the (Mot. 1505) or the(Mot. 1715).

K4J, and 730 - K4M, and 760 or 761



Place the inlet water pipe of the fuel pump water fitted with a new gasket.

Tighten the screw of the inlet water pipe to torque. water pump day (2.2 daN.m) (18).

Put:

- the multifunction support accessories (checking that the multifunction stand is resting on the lower case at (21)),
- the screws (19) securing the multifunction support without blocking them,
- depending on the version, the lower screw (20) for fixing the multi-function bracket without blocking it.

Good

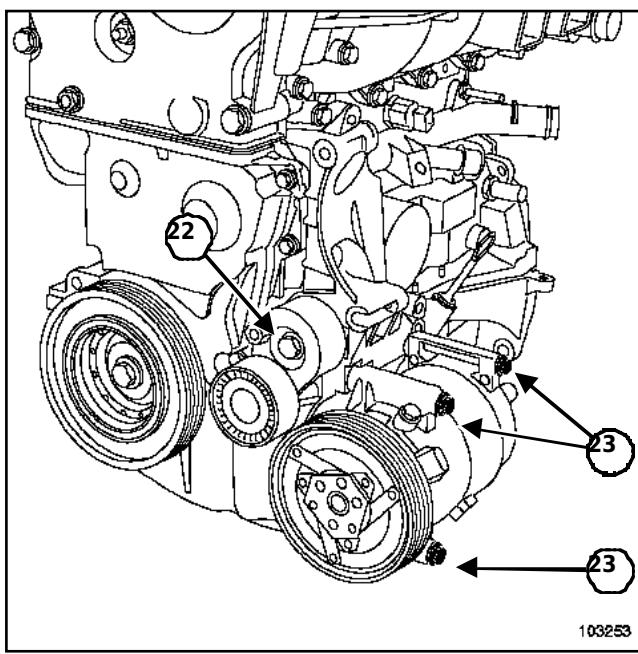
Tighten the pairs:

- the **lower fixing screw of the multi-bracket function (2.1 daN.m) (20)**,
- the **fixing screws of the multifunction bracket (4.4 daN.m) (19)**.

ENGINE AND LOWER ENGINE ASSEMBLY

Engine: Dress

10A

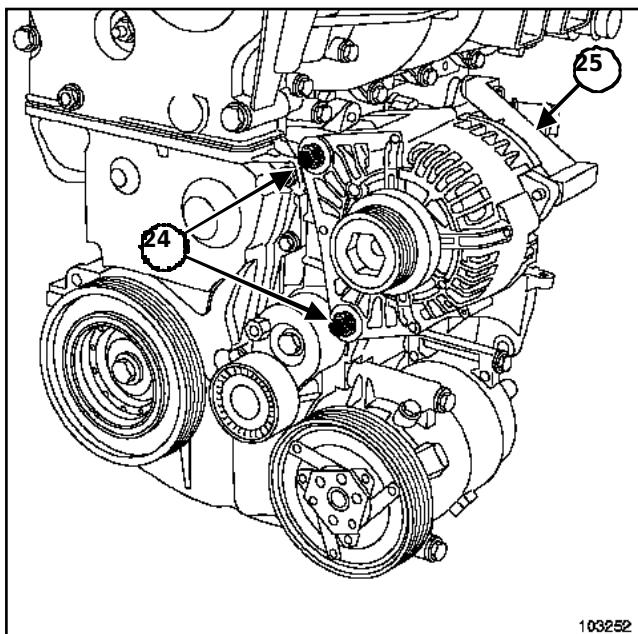


Fit the automatic tensioner roller.

**Tighten the screw of the automatic tensioner roller to torque.
tico (4 daN.m) (22).**

Install the air conditioner compressor.

Torque the **screws
air conditioner** **compressor
(2.1 daN.m) (23).**

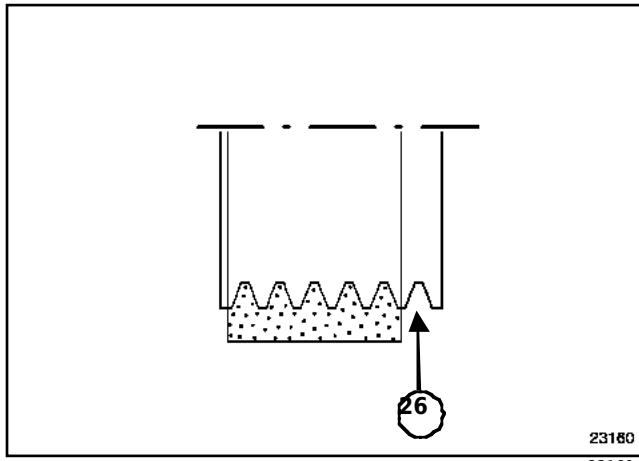


Fit the alternator.

**Tighten the alternator bolts to torque
andN.m) (24).**

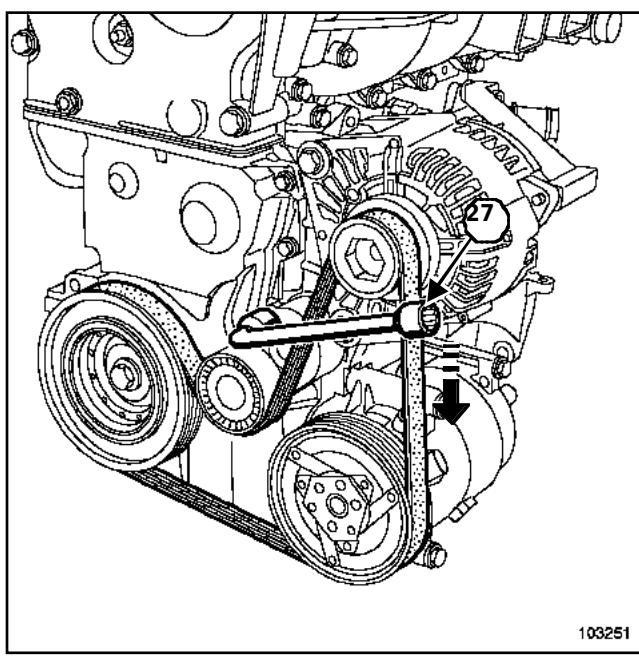
The alternator reinforcement crutch (25).

**a - Replacing the accessory strap for a motor
equipped with air conditioner**



ATTENTION

It is imperative to check that the inner tooth
(26) of the pulleys is free when placed
the belt.

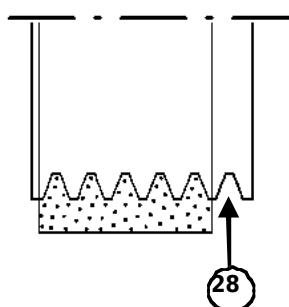


Pivot the key (27) in the direction of the arrow to slacken
the tensioner roller.

Attach the accessory strap.

Turn the crankshaft two times to position it correctly.
mind the accessory strap.

b - Replacing the accessory strap for a motor without air conditioner

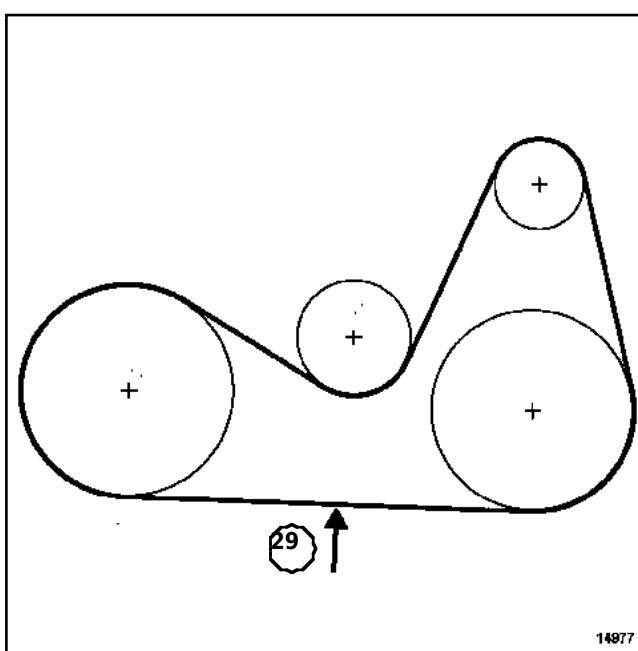


23160

23160

ATTENTION

It is imperative to check that the inner tooth(**28**) of the pulleys is free when placed the belt.

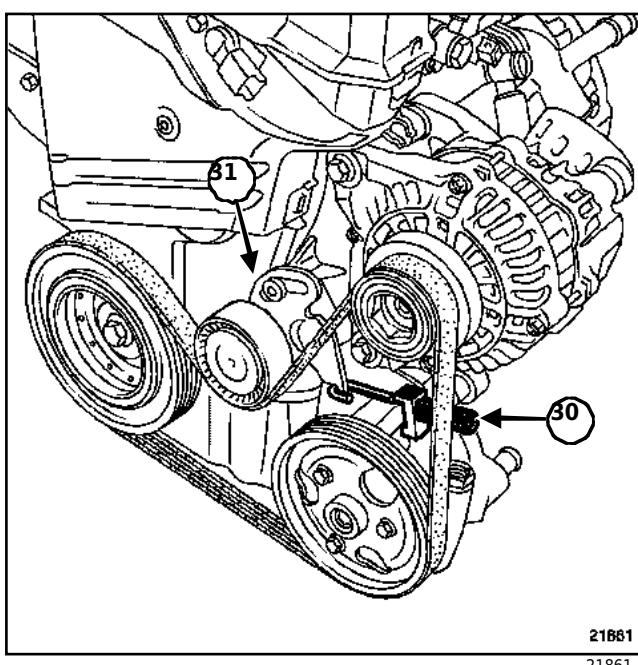


readjust the voltage using the (Mot. 1505) or the (Mot. 1715).

Remove the belt tensioning tool (Mot. 1638) (**30**).

5 -

Fit the electrical wiring of the motor.



Attach the accessory strap.

Adjust the belt tension by screwing on the nut of the tool (Mot. 1638) (**30**) until obtaining a voltage between **223** and **245 Hz** at the measurement point dida (**29**) with the help of (Mot. 1505) or (Mot. 1715).

Tighten the roller fixing bolts to torque tensor (3 daN.m) **31**

Turn the crankshaft two times to position it correctly.mind the accessory strap.

Check that the voltage is between **223** y **245 Hz**

ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

10A

Essential specialized tooling

Against. 799-01	Immobilizer from the pinions for correia jagged from distribution
Against. 1496	Useful for setting the Camshafts
Against. 1489	Peg of setting top dead center

Tightening torques m

roller screw wind-distribution lator	4.5 daN.m
pulley bolt crankshaft accessories	4 daN.m + 115° 15°
tensioner roller nut of distribution	2.7 daN.m
tensioner roller nut of distribution	2.7 daN.m
spike plug top dead center	2 daN.m
screws Y nuts of upper distribution crankcase button	4.1 daN.m

REPLACING THE TIMING BELT

K4J, y 700 o 710 o 711 o 712 o 713 o 714 o 715 o 730 or 732 or 750 – K4M, and 700 or 701 or 704 or 706708 o 709 o 710 o 711 o 712 o 714 o 720 o 724 o 734 o 740 o 742 o 743 o 744 o 745 o 748 o 750 o 752 or 753

NOTE:

This process is applied to replace the beltdistribution and any elements found
go to the front of the distribution and not
requires loosening the pulleys of the trees of
levas.

ATTENTION

It is essential to replace the pulley bolt of crankshaft accessories.

ATTENTION

Degrease imperatively:

- the end of the crankshaft,
- the inside diameter and the bearing faces of the timing pinion,
- the support faces of the accessory pulley of the crankshaft,

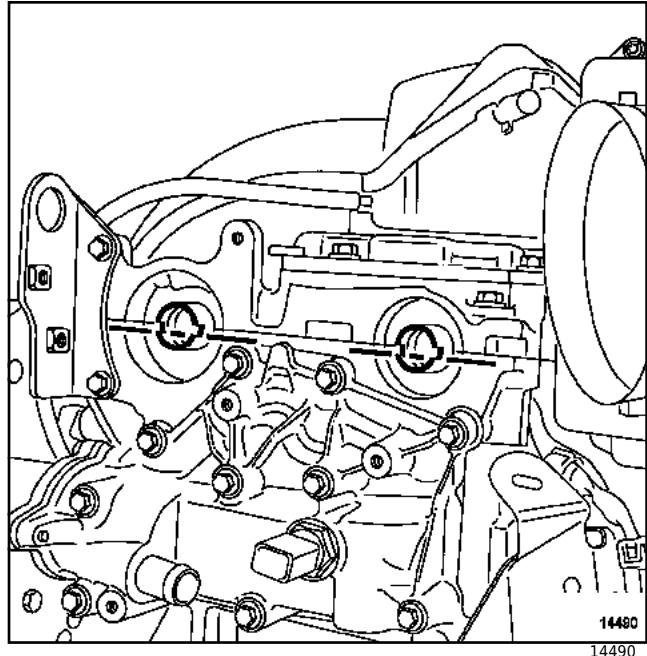
This is to avoid skidding between:

- the crankshaft,
- the camshaft pulleys.

This skidding causes the destruction of the engine.

ATTENTION

Never turn the engine in the opposite direction to of operation.

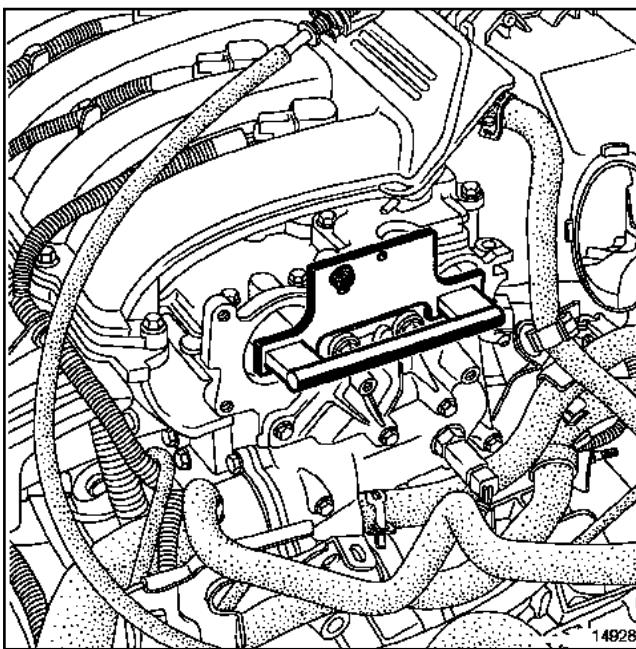


Position the camshaft grooves horizontally zontally and off-center down by turning thecamshafts with the help of (Mot. 799-01) if it isnecessary.

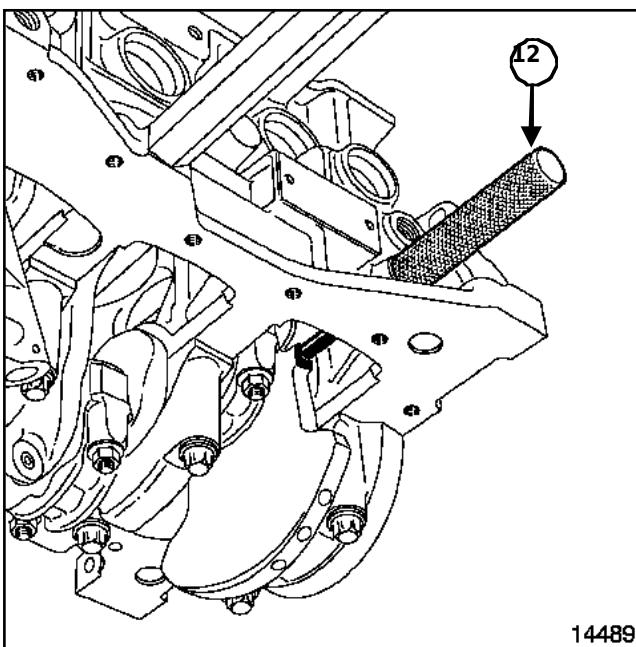
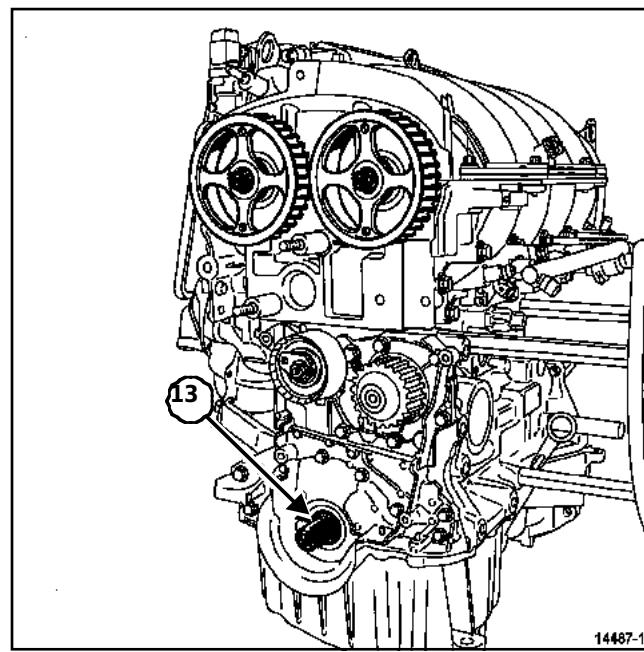
ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

10A



Fit the (Mot. 1496), fixing it at the end of the Camshafts.

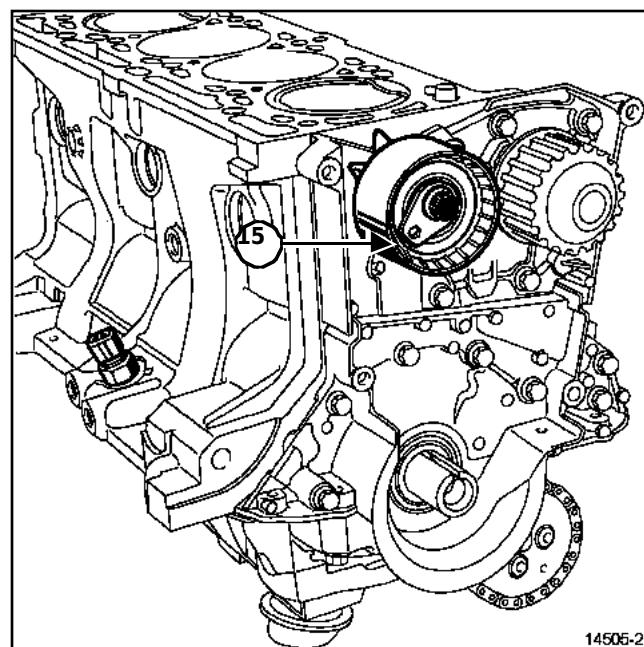


14489 Check that the crankshaft is well supported on the top dead center pin (Mot. 1489) (12) and the groove (13) in crankshaft must be facing

above.

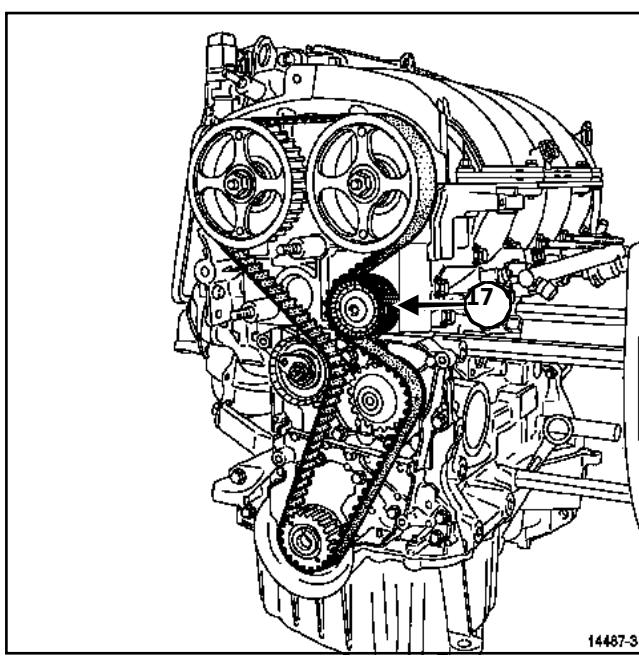
ATTENTION

When replacing the recommended timing belt by the constructor, it is necessary to replace imperative-the belt, tensioner and take-up rollers and the crankshaft accessory pulley bolt.



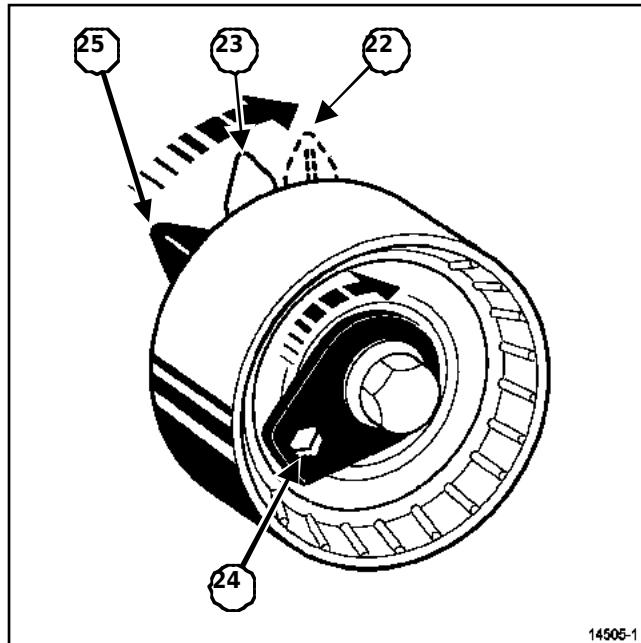
Position the tensioner roller by positioning the spur of the tensioner roller in groove (15).

Fit the crankshaft timing pinion.



14487-3

a - First version



14505-1

Put:

- the timing belt,
- the distribution winder roller (**17**)

Torque tighten the **screw of the winding roller.**

distribution (4.5 daN.m) .

6 - Timing belt tension

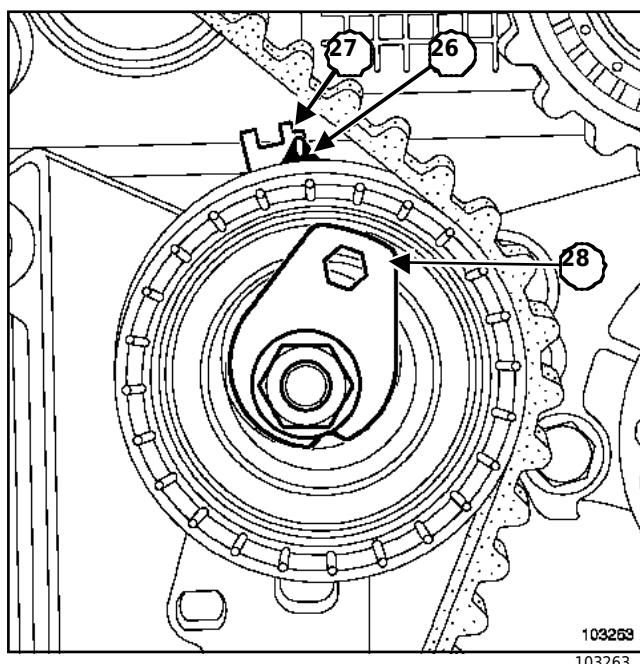
There are two versions of the timing tensioner roller.

Position (**25**) corresponds to the moving index in repose.

Make the moving index (**22**) protrude from the rollertensioner **7 to 8 mm** with respect to the fixed index (**23**) by turning the eccentric clockwise me-

using a **6mm** hex wrench at (**24**).

b - Second version



Bring the moving index (26) in front of the notch(27), turning the eccentric (28) clockwise **clockwise using a 6-inch hex wrench**

mm

Torque tighten the nut of the timing tensioner pulley.
tion **0.7 daN.m** .

Fit the crankshaft accessory pulley.

Tighten the **screw of the position read of crankshaft accessories** (**4 daN.m + 115° ±íru 15°**)

Extract:

-the camshaft setting tool (Mot. 1496),

-the top dead center pin (Mot. 1489).

Perform a two-turn rotation of the crankshaft in clockwise distribution side,

before the end of the two laps.

Screw in the top dead center pin (Mot. 1489); on the engine block.

Bring the crankshaft slowly and smoothly to rest it on the top dead center pin.

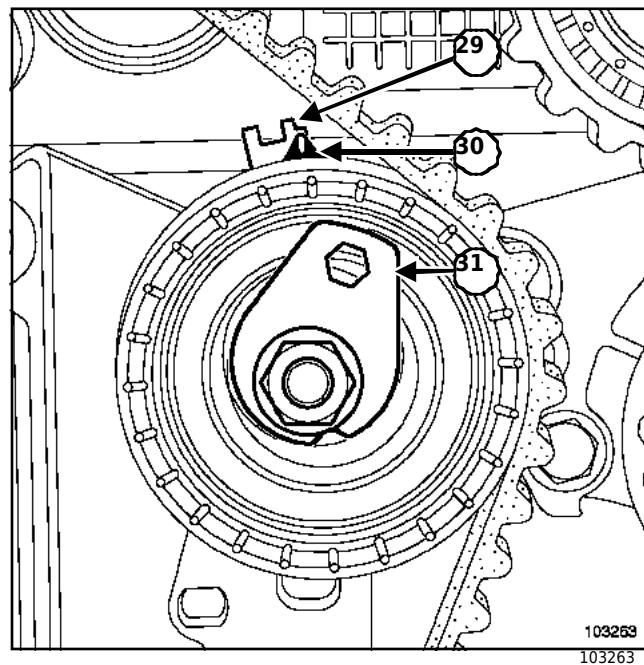
Remove the top dead center pin (Mot. 1489).

c - First version

Loosen the roller nut a maximum of one turn timing tensioner while holding the eccentric ca using a **6mm hex wrench** .

Align the moving index (22) with the fixed index (23) turning the eccentric counterclockwise clockwise.

d - Second version



Verify that the moving index (30) is in front of the notch (29), if not loosen one turn at most the timing tensioner roller nut holding at the same time the eccentric by means of a hexagonal wrench of **6 mm** .

Progressively bring the moving index (30) against the notch (29) by turning the eccentric (31) in the direction clockwise.

Torque tighten the **nut of the timing tensioner pulley button** (**2.7 daN.m**) .

7 - Checking the timing of the timing belt

a - Tension control

Perform a two-turn rotation of the crankshaft in clockwise distribution side,
before the end of the two laps.

Screw in the top dead center pin (Mot. 1489) on the engine block.

Bring the crankshaft slowly and smoothly to rest it on the top dead center pin.

Remove top dead center pin.

Check that the indexes of the timing tensioner roller are aligned, if not, redo the tension loosening the nut of the eccentric of the tensioner roller.

ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

10A

Correctly align the moving index with respect to the indexes fixed or to the notch (depending on the type of rollerrow).

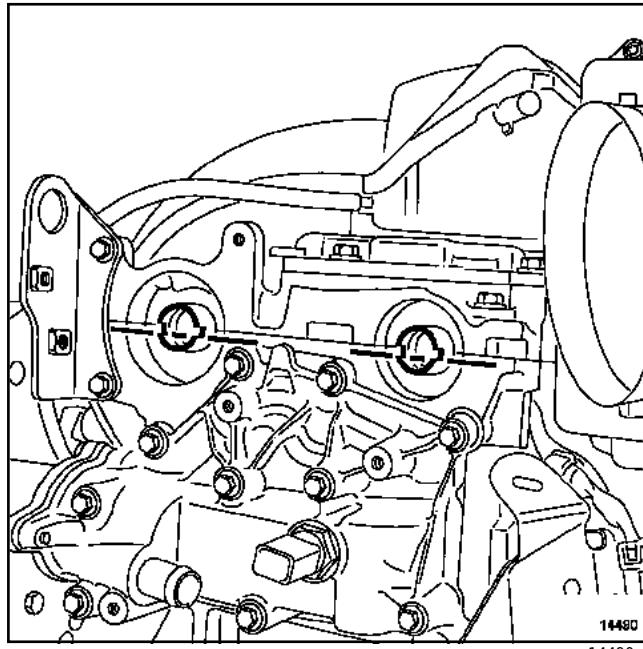
Torque tighten the **nut of the timing tensioner pulley**.
button (2.7 daN.m).

b - Draft control

Make sure the correct position of the indexes on the distribution tensioner roller before carrying out control of the draft of the distribution.

Screw in the top dead center pin (Mot.1489) on the engine block.

Bring the crankshaft slowly and smoothly to rest it on the top dead center pin.



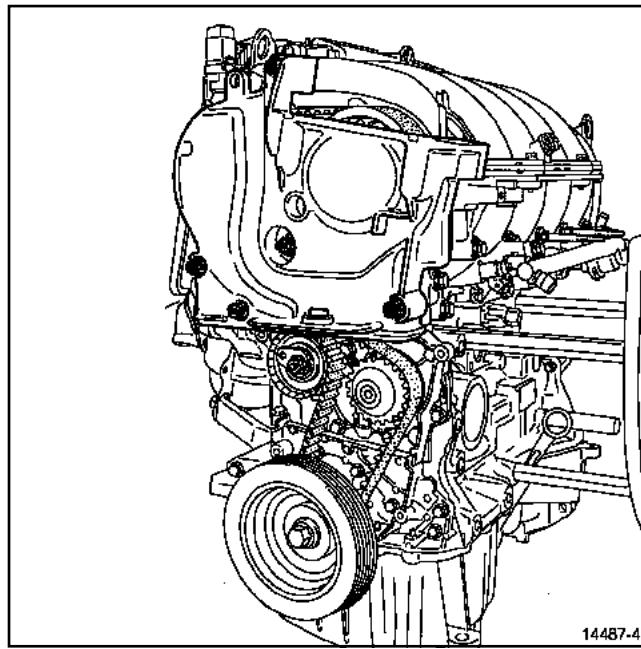
Fit (without forcing) the tool for setting the shaftcams (Mot. 1496) (the grooves at the end of the camshafts must be horizontal and lowered drawn down).

NOTE:

If the camshaft setting tool is not introduced, the draft of the distribution must be redone.button and tension.

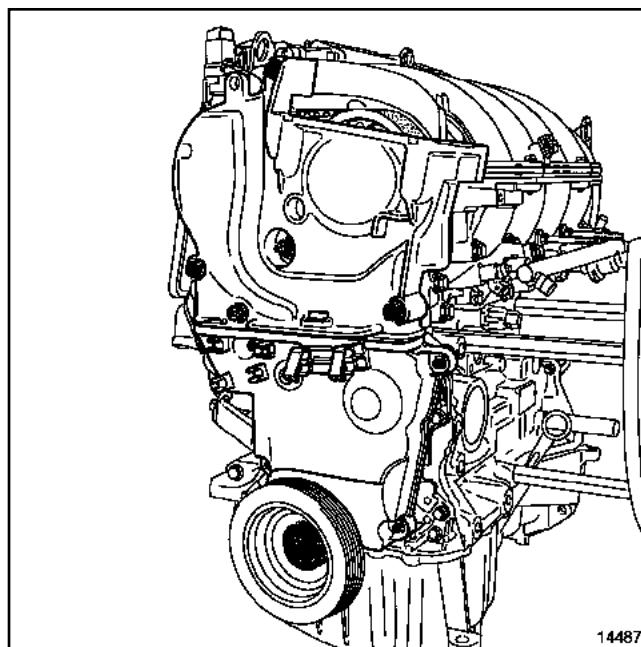
Fit the cap of the upper neutral pin prior applying a point of **RHODORSEAL 5661** in the threaded hole.

Torque tighten the **knit dowel plug upper dead (2 daN.m)**.



Fit the upper timing cover.

Tighten the screws and nuts of the sump sump to torque. distribution panel (4.1 daN.m).



Fit the lower timing cover.

ENGINE AND LOWER ENGINE ASSEMBLY Timing belt

10A

K4M

Essential specialized tooling	
Against. 1496	Useful for setting the Camshafts
Against. 1489	Peg of setting top dead center

Essential specialized tooling

Against. 1496 Useful for setting the
Camshafts

Against. 1489 Peg of setting
top dead center

Tightening torques m

roller screw wind- distribution lator	4.5 daN.m
pulley bolt	4 daN.m + 115°
crankshaft accessories	15°
tensioner roller nut of distribution	2.7 daN.m
tensioner roller nut of distribution	2.7 daN.m
spike plug top dead center	2 daN.m
screws Y nuts of upper distribution crankcase button	4.1 daN.m

ATTENTION

It is essential to replace the pulley bolt of crankshaft accessories.

ATTENTION

Degrease imperatively:

- the end of the crankshaft,
 - the inside diameter and the bearing faces of the timing pinion,
 - the support faces of the accessory pulley of the crankshaft,

This is to avoid skidding between:

- the crankshaft,
 - the camshaft pulley

This skidding causes the destruction of the engine.

ATTENTION

Never turn the engine in the opposite direction to
of operation.

REPLACING THE TIMING BELT

K4M, and 760 or 761

Note:

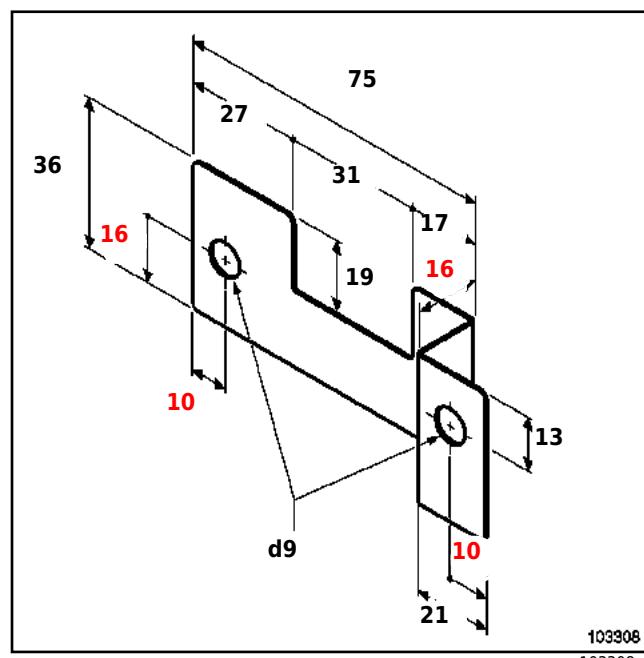
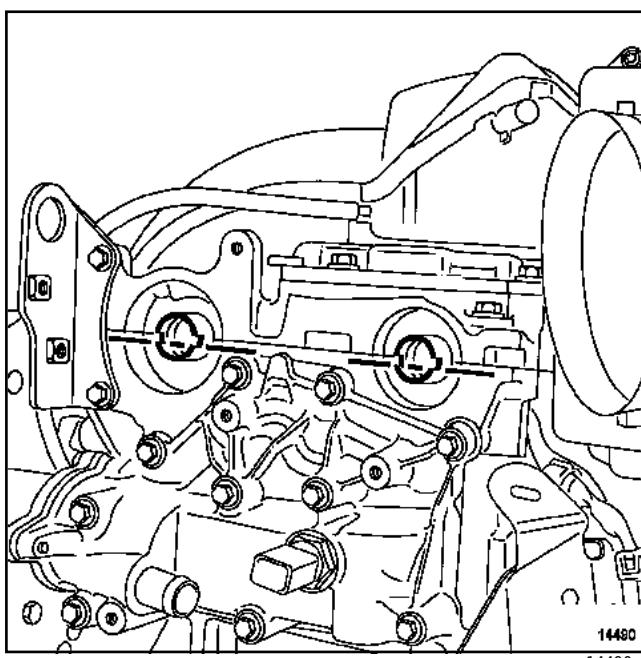
This process is applied to replace the belt distribution and any elements found go to the front of the distribution and not requires loosening the pulleys of the levas.

ENGINE AND LOWER ENGINE ASSEMBLY

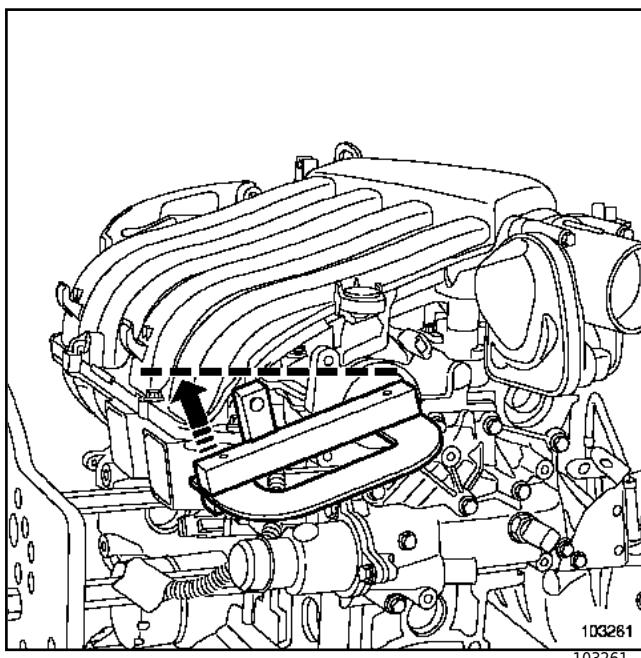
Timing belt

10A

K4M

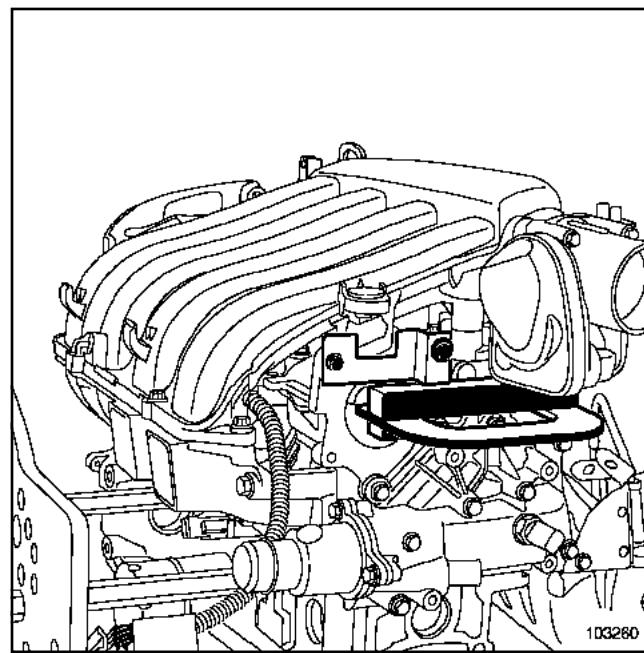


Conduct a locally made squad to keep the tool (Mot. 1496) in place.



position the camshaft grooves horizontally and off-center down by turning the

camshafts with the help of (Mot. 1496), if necessary
cesario.



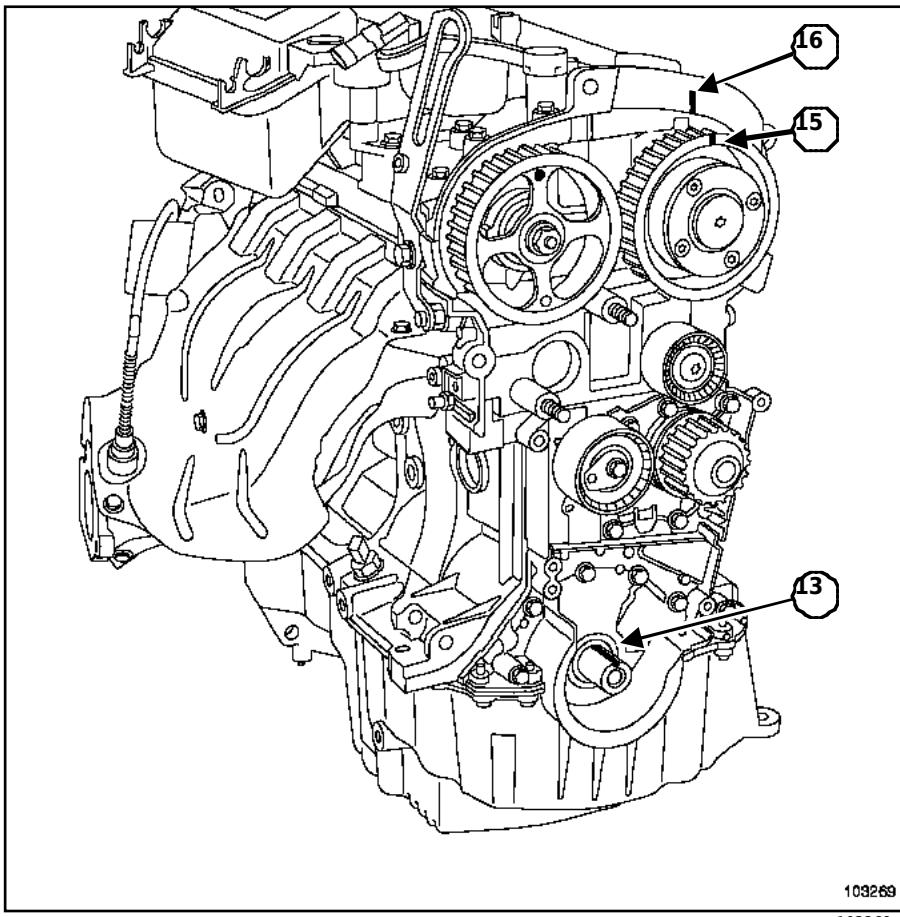
Fix the tool (Mot. 1496) at the end of the shafts cam.

ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

10A

K4M

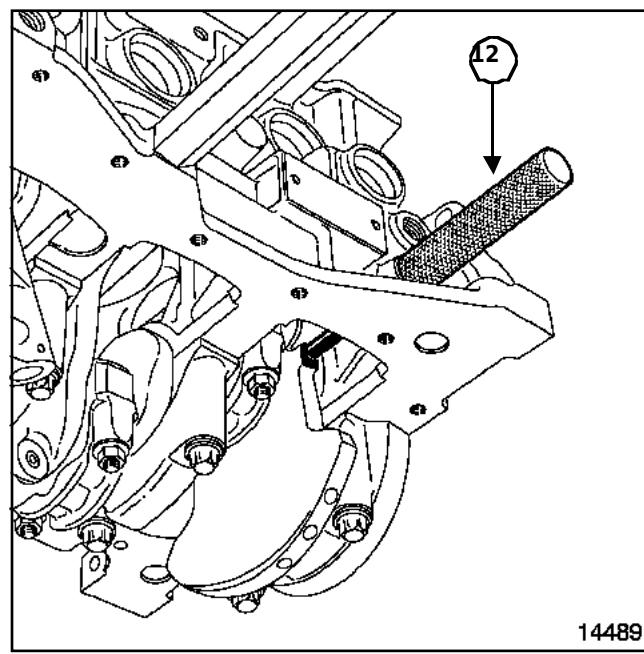


103269

103269

Check that the mark (**15**) on the phase shifter is correct.tical and upward.

Make a mark (**16**) with a pencil between the crownof the phase shifter and the cylinder head cover.



14489

14489

Check that the crankshaft is well supported on the top dead center pin (Mot. 1489) (**12**) and the groove (**13**) in crankshaft must be facing above.

ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

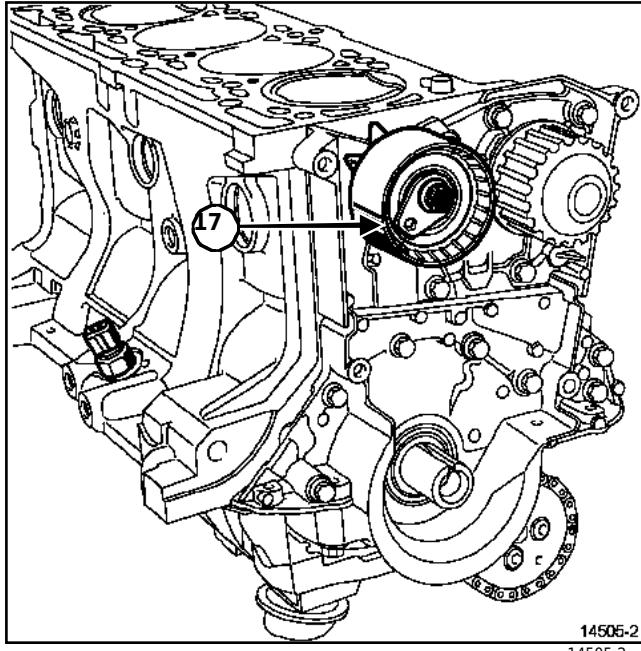
10A

K4M

ATTENTION

When replacing the recommended timing belt by the constructor, it is necessary to replace imperative-

the belt, tensioner and take-up rollers and the crankshaft accessory pulley bolt.



Position the tensioner roller by positioning the spur of the tensioner roller in groove (**17**).

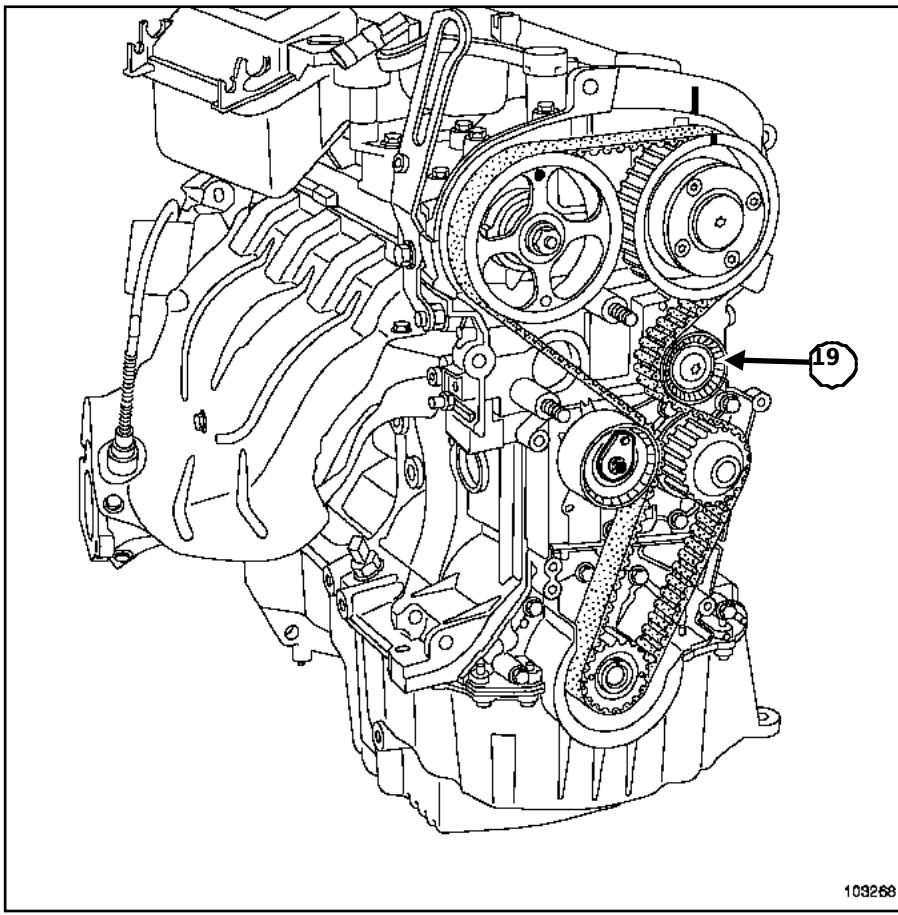
Fit the crankshaft timing pinion.

ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

10A

K4M



103268

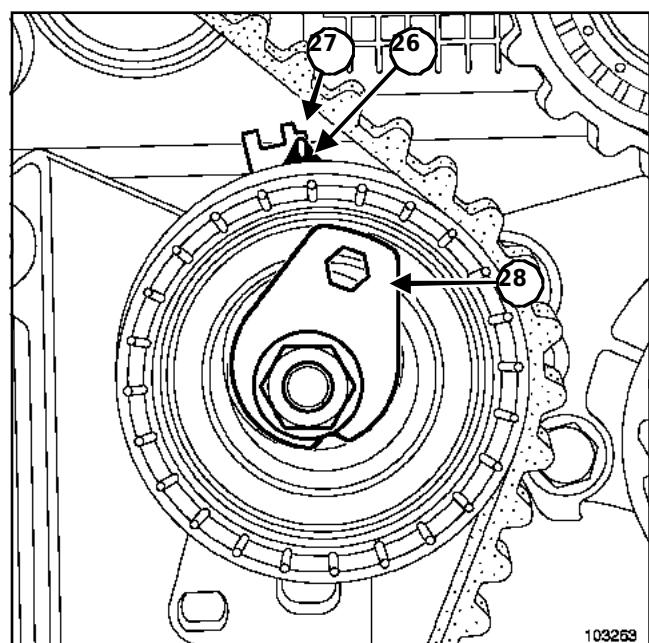
103268

Put:

- the timing belt,
- the distribution winder roller. (19)

Torque tighten the **screw of the winding roller**.
distribution (4.5 daN.m).

8 - Timing belt tension



103263 Bring the moving index (26) in front

of the notch(27), turning the eccentric (28)

clockwise **clockwise** using a 6- inch hex

wrenchmm

ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

10A

K4M

Torque tighten the nut of the timing tensioner pulley.

tion **0.7 daN.m**.

Fit the crankshaft accessory pulley.

Tighten the **screw of the posi-read** of crankshaft accessories ($4 \text{ daNm} + 115^\circ$ **15°**)

Extract:

-the camshaft setting tool (Mot.1496),

-the top dead center pin (Mot. 1489).

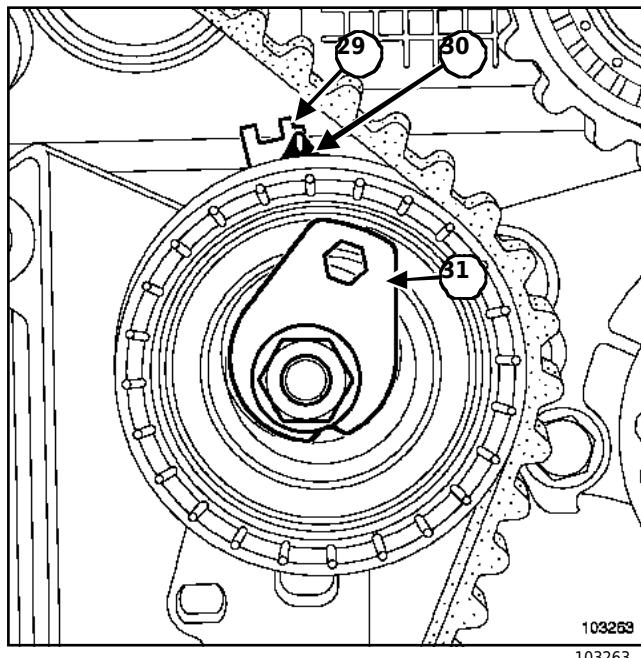
Perform a two-turn rotation of the crankshaft in clockwise direction side, before the marks are aligned (in the phase shift) camshaft torch) made previously by

the operator.

Screw in the top dead center pin (Mot.1489) on the engine block.

Bring the crankshaft slowly and smoothly to rest it on the top dead center pin.

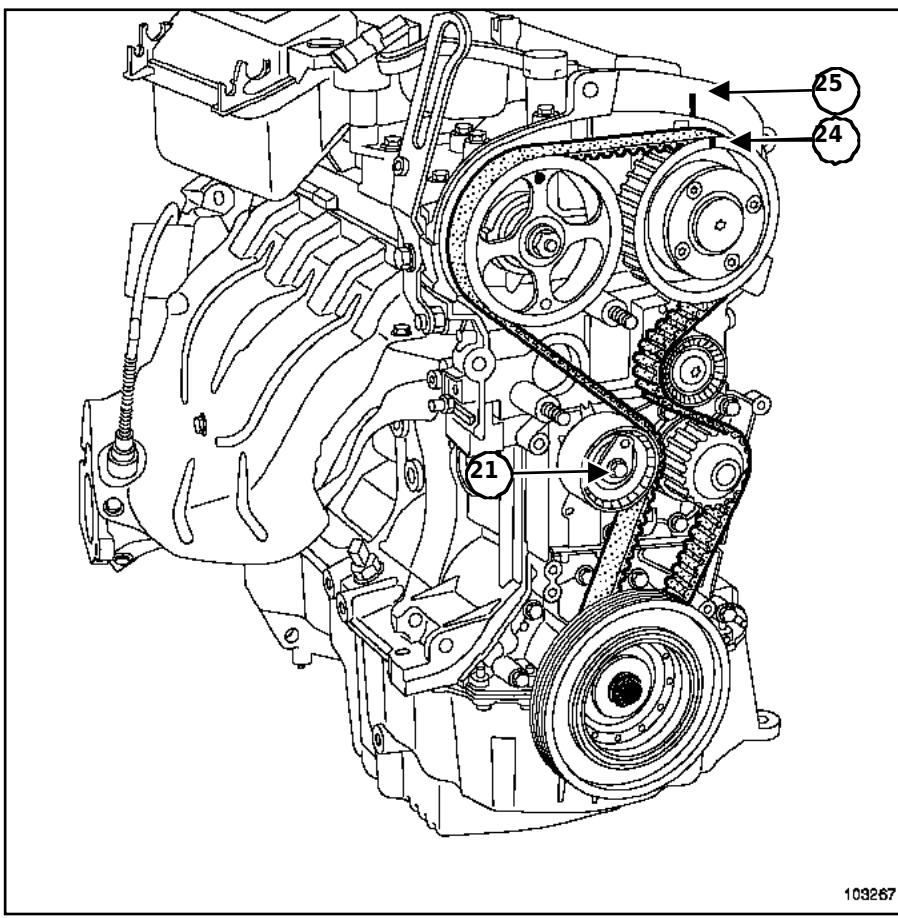
Remove the top dead center pin (Mot.1489).



Verify that the moving index (**30**) is in front of the notch (**29**), if not loosen one turn at most the timing tensioner roller nut holding at the same time the eccentric by means of a hexagonal wrench of **6 mm** .

Progressively bring the moving index (**30**) against the notch (**29**) by turning the eccentric (**31**) in the direction clockwise.

K4M



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103267

Torque tighten the **nut of the timing tensioner pulley.**
variation (2.7 daN.m) (21).

Check that the mark (24) of the phase shifter is supplied
marked with (25) previously made
by the operator.

Correctly align the moving index with respect to the
notch.

Torque tighten the **nut of the timing tensioner pulley.**
button (2.7 daN.m) .

9 - Timing belt timing check

a - Tension control

Perform a two-turn rotation of the crankshaft in
clockwise distribution side,
before the marks are aligned (in the phase shift)
camshaft torch) made previously by
the operator.

Screw in the top dead center pin (Mot.1489) on the
engine block.

Bring the crankshaft slowly and smoothly to rest it on the top dead center pin.

Remove top dead center pin.

Check that the indexes of the timing tensioner
rollerare aligned, if not, redo the tensionloosening the
nut of the eccentric of the tensioner roller.

b - Draft control

Make sure the correct position of the indexes on the
distribution tensioner roller before carrying out
control of the draft of the distribution.

Screw in the top dead center pin (Mot.
1489) on the engine block.

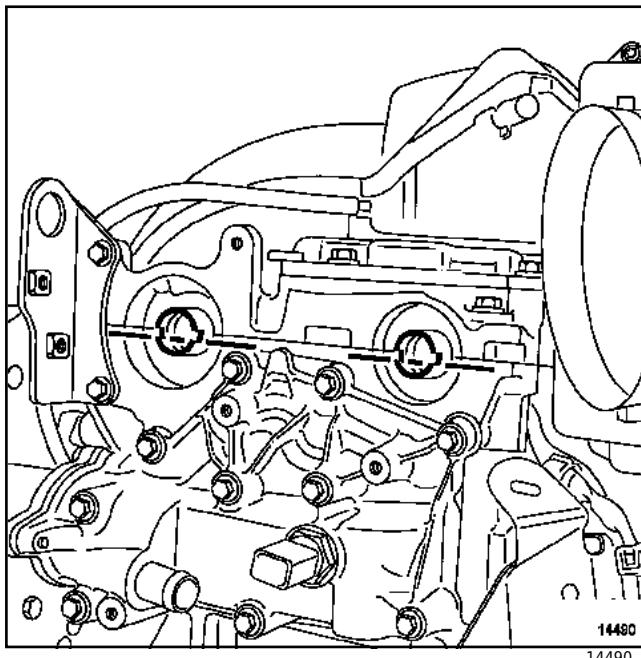
Bring the crankshaft slowly and smoothly to rest it on the top dead center pin.

ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

10A

K4M



Fit (without forcing) the tool for setting the shaftcams (Mot. 1496) (the grooves at the end of the camshafts must be horizontal and lowered drawn down).

Note:

If the camshaft setting tool is not introduced, the draft of the distribution must be redone. button and tension.

Fit the cap of the upper neutral pin. prior applying a point of **RHODORSEAL 5661** in the threaded hole.

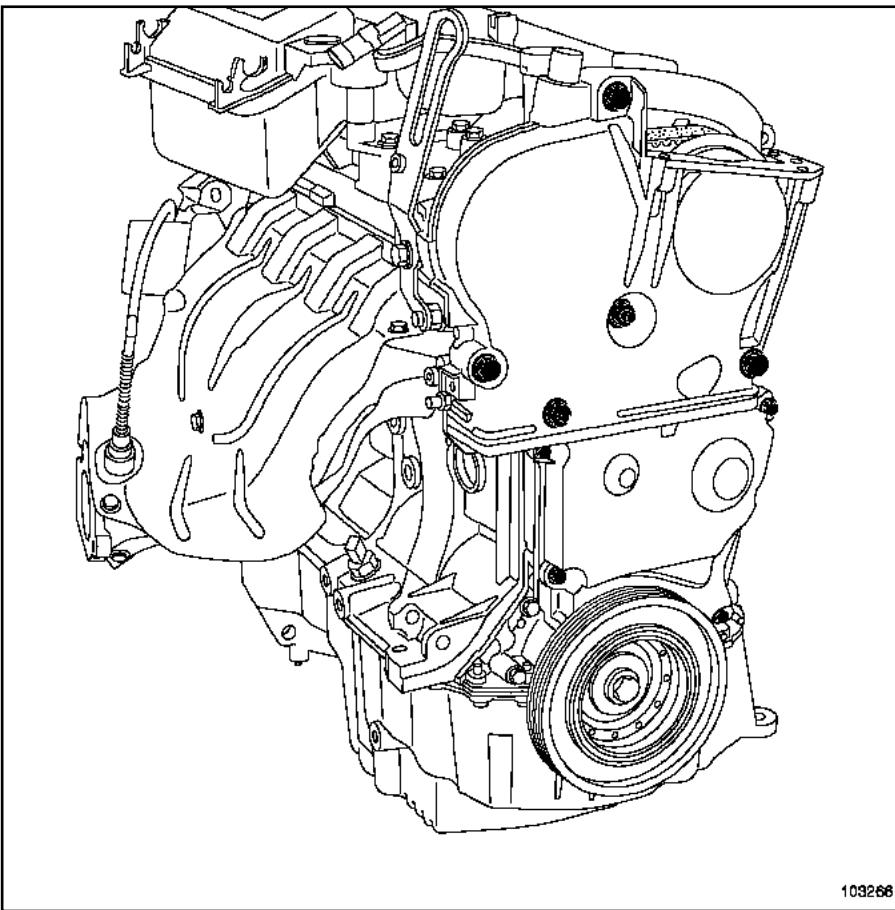
Torque tighten the **knit dowel plug upper dead (2 daN.m)**.

ENGINE AND LOWER ENGINE ASSEMBLY

Timing belt

10A

K4M



103266

103266

Fit the distribution crankcases.

Tighten the screws and nuts of the sump sump to torque.

lower distribution (4.1 daN.m) .