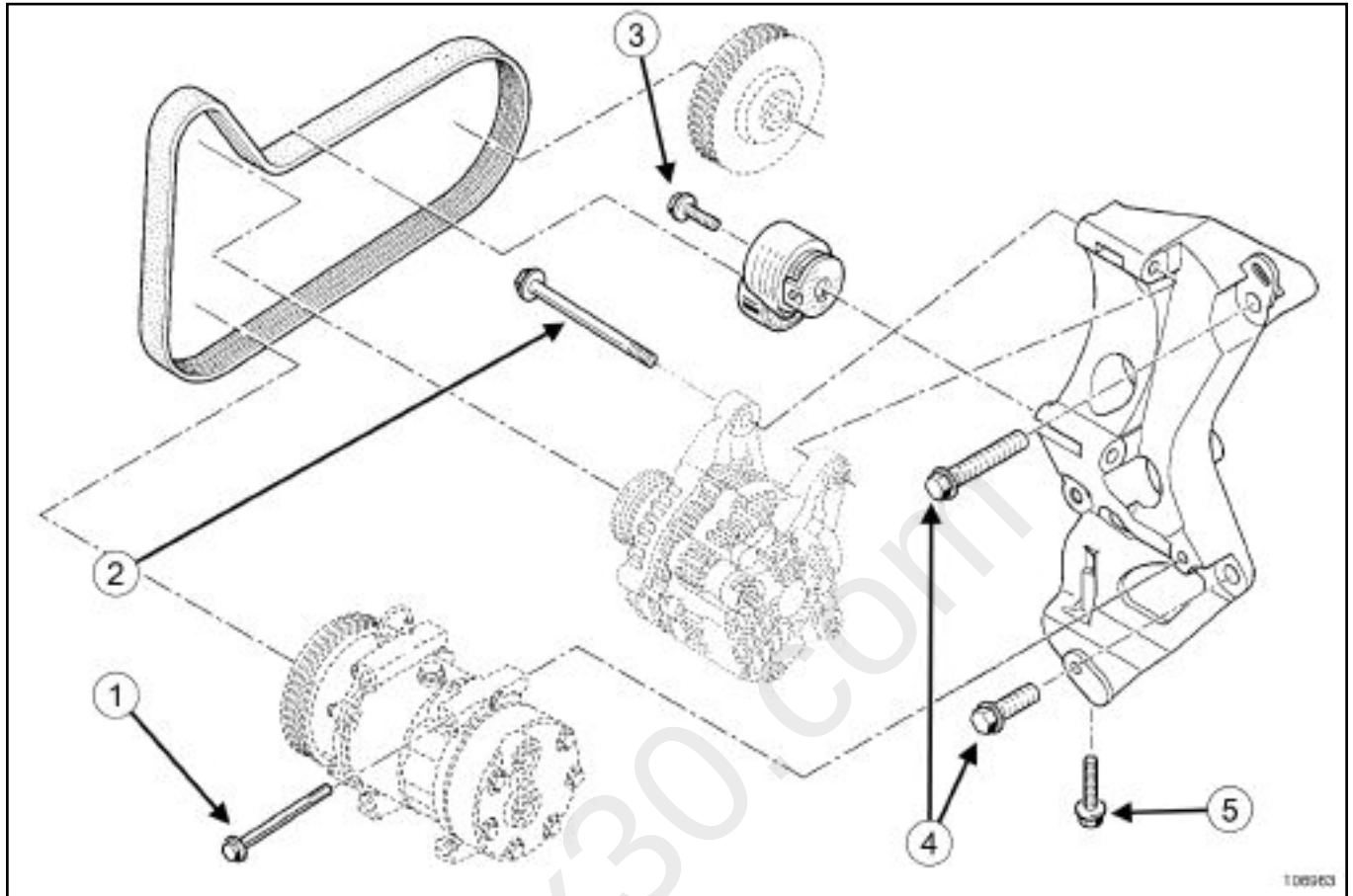


II - ACCESSORIES PANEL ON VEHICLES WITH AIR
CONDITIONING

106963

Tightening torque in Nm and/or degrees

Tightening torque in Nm and/or degrees		
(1)	Air conditioning compressor bolt	21 ± 2.1
(2)	Alternator bolts	21 ± 2.1
(3)	Auto tensioner bolts	40 ± 4
(4)	Multifunction support bolts	44 ± 4.4
(5)	Multifunction support lower bolt	21 ± 2.1

I - POSITION OF THE CYLINDERS

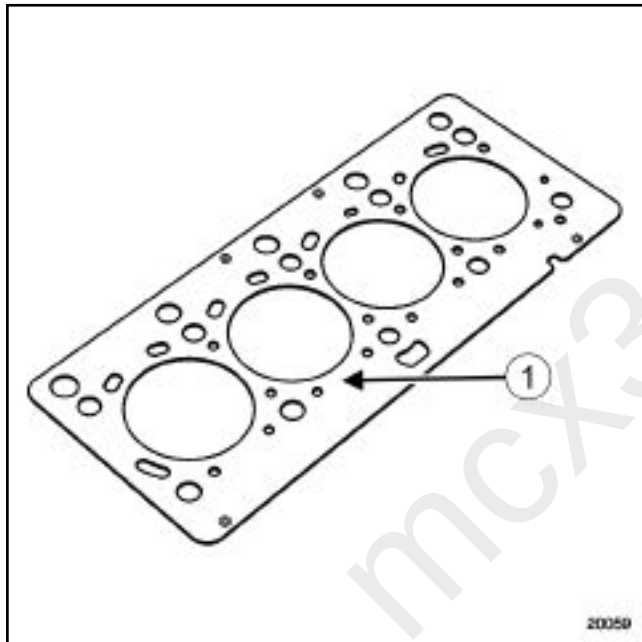
Cylinder **no. 1** is at the flywheel end.

II - INJECTION SEQUENCE

The injection sequence is **1-3-4-2** .

III - HEATER PLUG

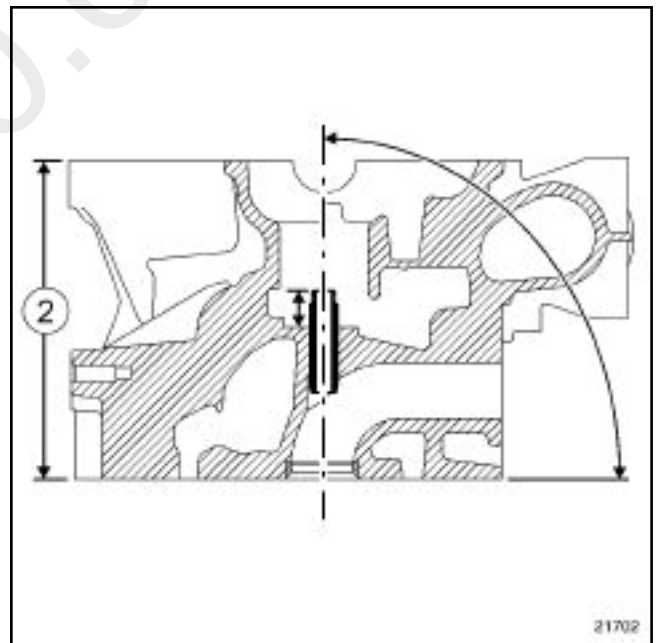
Type of plug	Resistance
BERU	0.6 Ω
CHAMPION	

IV - CYLINDER HEAD GASKET

20059

The thickness of the cylinder head gasket is measured at **(1)** .

Engine type	Thickness of the cylinder head gasket in mm
K9K 260-270-272 K9K 700-702-704-710 up until 19/05/2004 . K9K 722 up until 16/07/2004 .	0.68 $\pm$ 0.03
K9K 700-702-704-710 from 19/05/2004 . K9K 722 from 16/07/2004 . K9K 274-276-706-712-714-716-718-724-728-729-732-750-752-760-762-764-766--768-790-792	0.71 $\pm$ 0.03

V - CYLINDER HEAD

21702

21702

1 - Cylinder head height

The cylinder head height **(2)** is **127mm** .

2 - Cylinder head gasket face bow

The maximum cylinder head gasket face bow is **0.05mm** .

Upper engine: Specifications

3 - Cylinder block gasket face bow

The maximum cylinder block gasket face bow is **0.03mm** .

4 - Cylinder head testing

Test the cylinder head for possible cracks using the **cylinder head test kit** .

5 - Cylinder head regrinding

WARNING

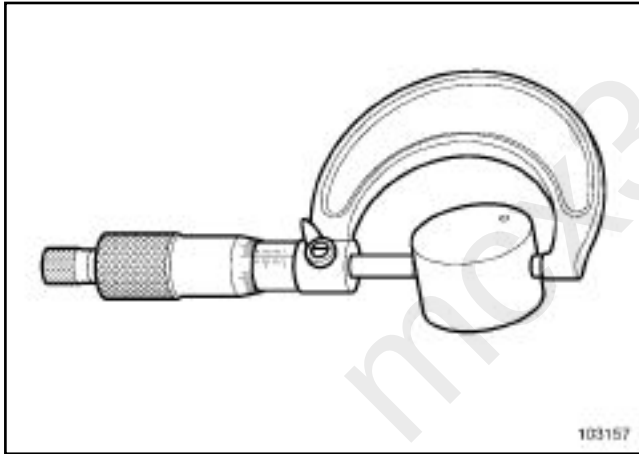
No regrinding is permitted.

VI - TAPPET

1 - Tappet type

The tappet is the monobloc type.

2 - Outer diameter of tappet



103157

The outer diameter of the tappet is **$34.975 \pm 0.01\text{mm}$** .

3 - Diameter of the tappet housing in the cylinder head

The diameter of the tappet housing in the cylinder head is **$35.02 \pm 0.02\text{mm}$**

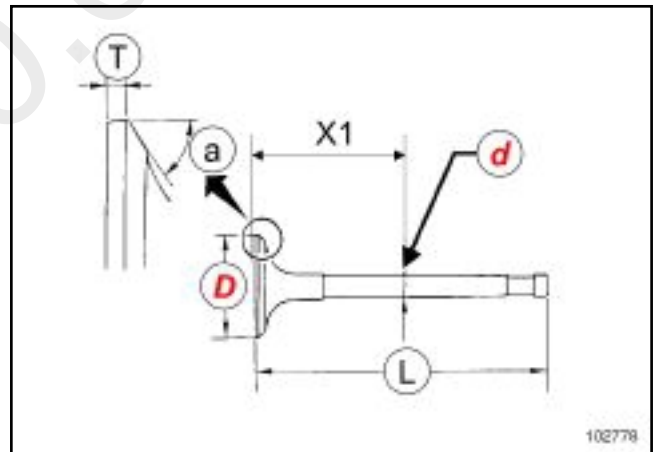
4 - Clearance between the tappet and its housing

The clearance between the tappet and its housing is between **0.015 and 0.075mm** .

VII - ADJUSTING VALVE CLEARANCES

Valves	Cold valve clearance in mm
Inlet	$0.20 + 0.05 / - 0.075$
Exhaust	$0.40 + 0.05 / - 0.075$

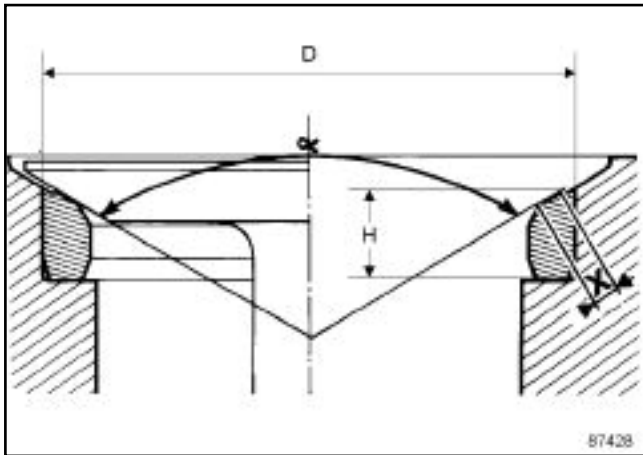
VIII - VALVES



102778

	Inlet valve	Exhaust valve
Diameter (D) of the valve stem is measured at point (X1)	$(D) = 5.977 \pm 0.008\text{mm}$ at (X1) = 41mm .	$(D) = 5.963 \pm 0.008\text{mm}$ at (X1) = 31mm .
Diameter (D) of the valve face	$33.5 \pm 0.12\text{mm}$	$29 \pm 0.12\text{mm}$
Thickness (T) of the valve head	1mm	1mm
Length (L) of the valve	$100.95 \pm 0.21\text{mm}$	$100.75 \pm 0.21\text{mm}$
Valve seat angle (A)	90°	90°
Valve lift	8mm	8.6mm

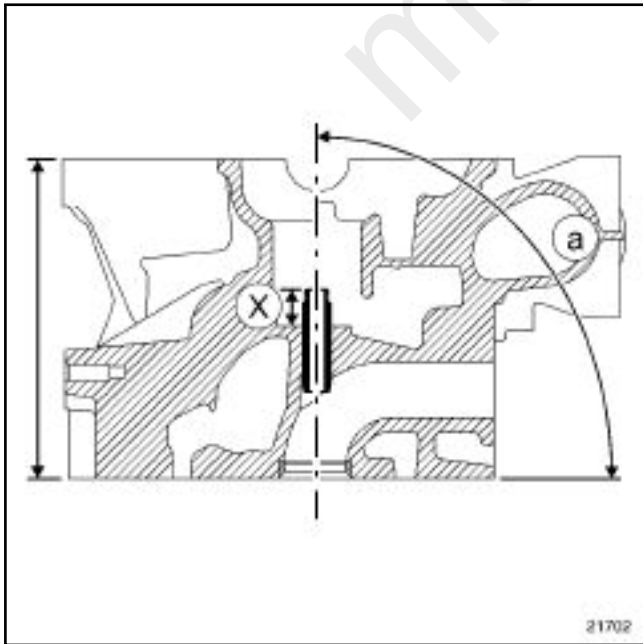
IX - VALVE SEATS



87428

	Inlet valve seat	Exhaust valve seat
Internal diameter of the valve seat housing (D) in the cylinder head	34.459 ± 0.015mm	29.97 ± 0.015mm
Outer diameter (D) of the valve seat	34.542 ± 0.008mm	30.042 + 0.006 / - 0.007mm
Valve seat housing depth (H) in the cylinder head	6mm	7mm
Valve seat height (H)	4.65 ± 0.04mm	5.67 ± 0.04mm
Width of mating faces X	1.8mm	1.8mm
Angle α of the valve seat	89°30'	89°30'

X - VALVE GUIDES



21702

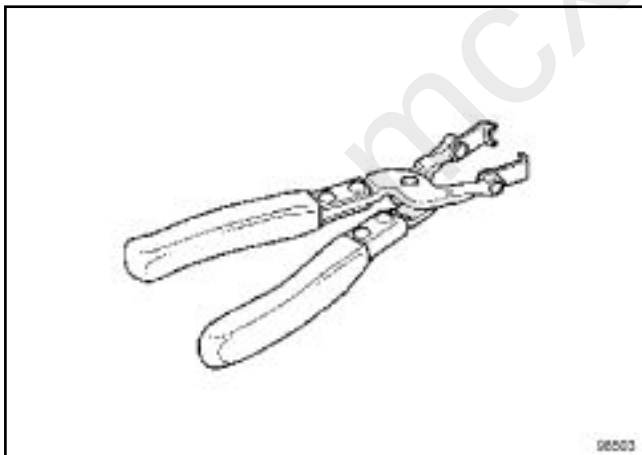
	Inlet guide	Exhaust guide
Length of the valve guide	$40.5 \pm 0.15\text{mm}$	
External diameter of guide:	$11 + 0.062 / + 0.044\text{mm}$	
Diameter of the guide housing in the cylinder head:	11mm	
Internal diameter of the valve guide Non machined Machined *	$5 + 0.12 / 0\text{mm}$ $6.009 \pm 0.009\text{mm}$	
Valve guide angle of inclination (A)	90°	
Valve guide position (X)	14mm	14.2mm
Clearance between the valve guide and the valve	0.02 to 0.05mm	0.03 to 0.063mm

* This dimension is measured with the guide fitted in the cylinder head.

XI - VALVE STEM SEALS

The inlet and exhaust guides have valve stem seals.

These must be replaced each time the valves are removed.

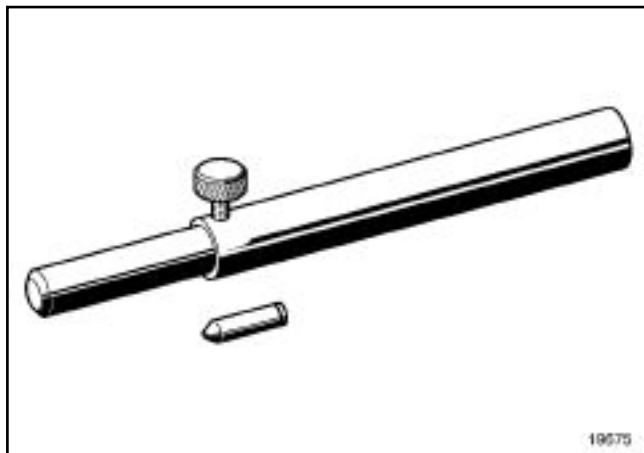


98503

The removal of the valve stem seals is carried out using (**Mot. 1335**).



18077
18077

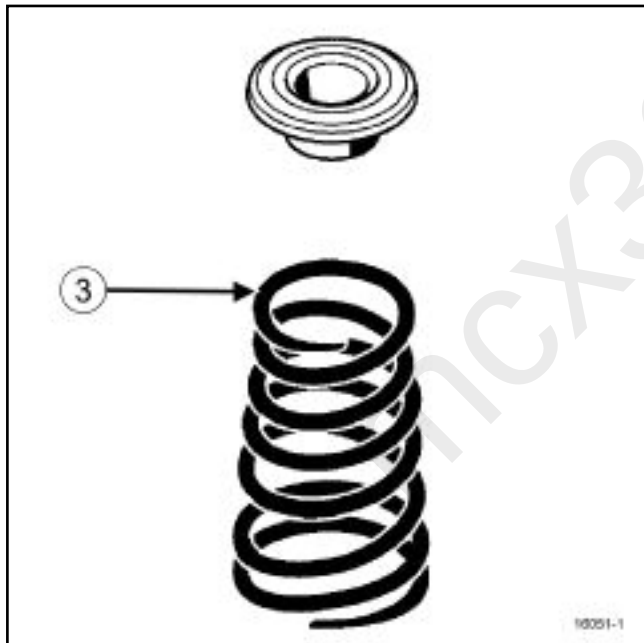


19675

The valve stem seals are refitted using either:

- a suitable tool, or
- tool (**Mot. 1511-01**).

XII - VALVE SPRINGS



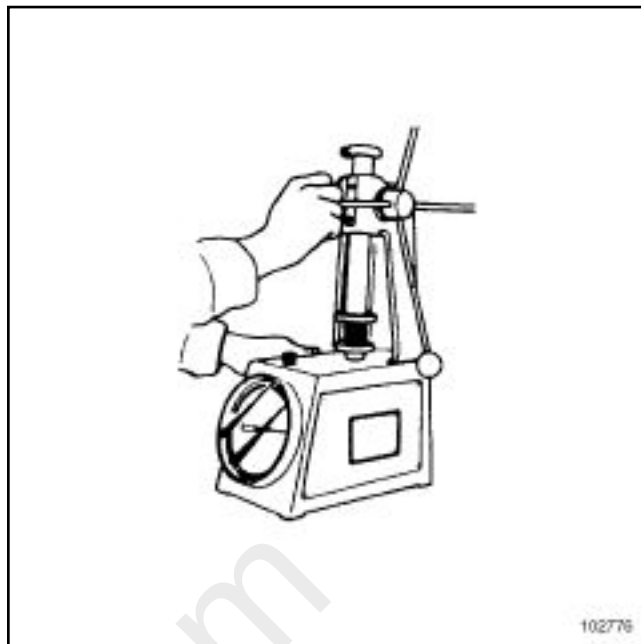
16051-1

The inlet and exhaust valve springs are identical.

The valve springs are the **conical** type and part (3) of the spring must face upwards.

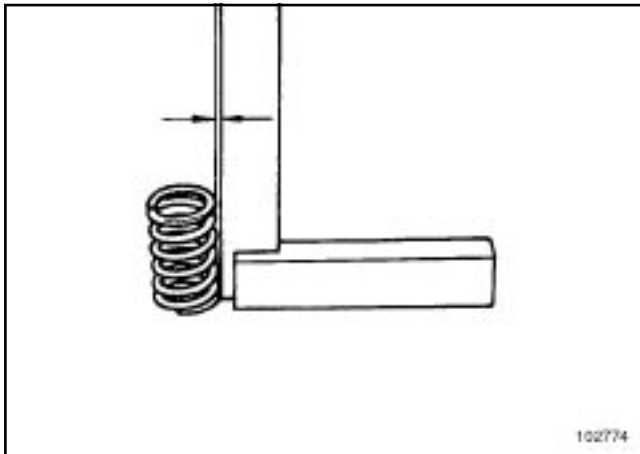
WARNING

CE MOTEUR NE POSSEDE PAS DE RONDELLES INFERIEURES DE RESSORT DE SOUPAPE.



102776

Free length	43.31mm
Length under a load of: - 230 ± 12 N - 500 ± 23 N	33.80mm 24.80mm
Length, coils touching	23.40mm
Diameter of the wire	3.45mm
Internal diameter: - at the base of the spring - at the top of the spring	18.80 ± 0.2mm 14.10 ± 0.2mm
External diameter: - at the base of the spring - at the top of the spring	25.70 ± 0.2mm 21 ± 0.2mm

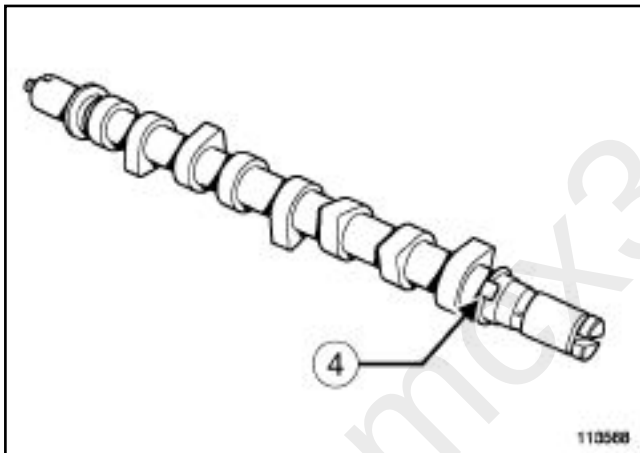


102774

Spring perpendicularity **1.2mm**

XIII - CAMSHAFT

1 - Identifying the camshaft



113568

With certain engines the camshaft has a target (4) for aligning the cylinders.

Engine type	Camshaft type
K9K 260-270-272-274-276-700-702-704-706-710-712-714-716-718-722-724-728-729-750-752-760-762-766-768-790-792	WITHOUT the target (4)
K9K 732 - 764	WITH the target (4)

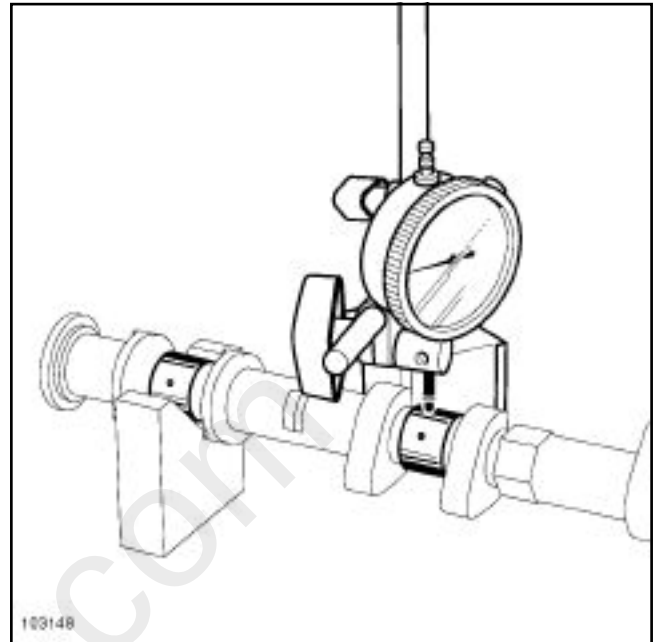
2 - Camshaft longitudinal play

The longitudinal play must be between **0.08** and **0.178mm**.

3 - Camshaft radial play

The radial play must be between **0.04** and **0.081mm**.

4 - Camshaft eccentricity.



103148

The camshaft eccentricity is **0.05mm**.

5 - Number of camshaft bearings

The camshaft has **6** bearings.

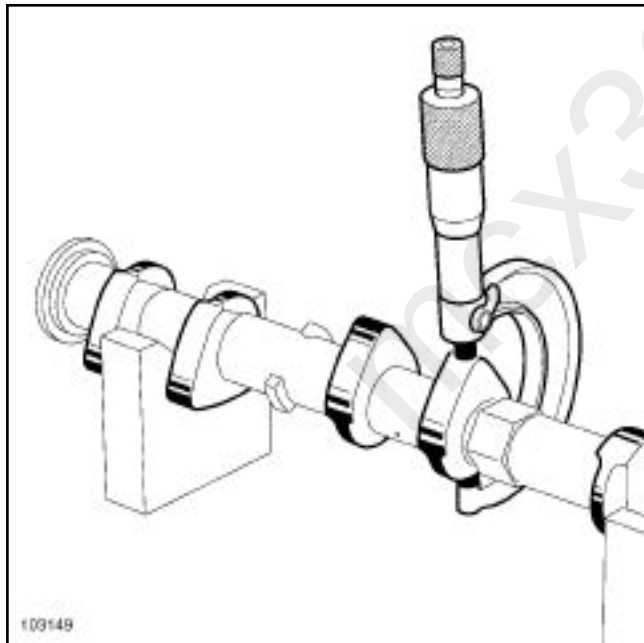
6 - Camshaft bearing diameters

Number of bearings	Diameter of camshaft bearings on the camshaft	Diameter of camshaft bearings on the cylinder head
No. 1	$24.9895 \pm 0.0105\text{mm}$	$25.05 \pm 0.01\text{mm}$
No. 2		
No. 3		
No. 4		
No. 5		
No. 6	$27.9895 \pm 0.0105\text{mm}$	$28.05 \pm 0.01\text{mm}$

Note:

The no. 1 camshaft bearing is located at the flywheel end.

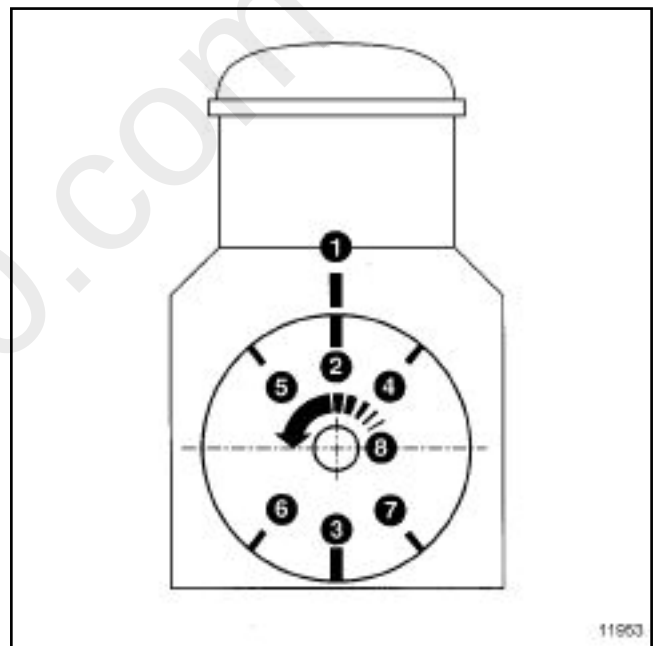
7 - Cam height



103149

	Inlet	Exhaust
Cam height	$44.015 \pm 0.03\text{mm}$	$44.595 \pm 0.03\text{mm}$

8 - Valve timing



11953

- 1 TDC fixed marking on the cylinder block,
- 2 TDC movable marking on the flywheel,
- 3 BDC movable marking on the flywheel,
- 4 Inlet Opening Retardation **ROA** ^{*},
- 5 Exhaust Closing Advance **AFE** ^{**},
- 6 Inlet Closing Retardation **RFA** ,
- 7 Exhaust Opening Advance **AOE** ,
- 8 Crankshaft direction of rotation (flywheel end).