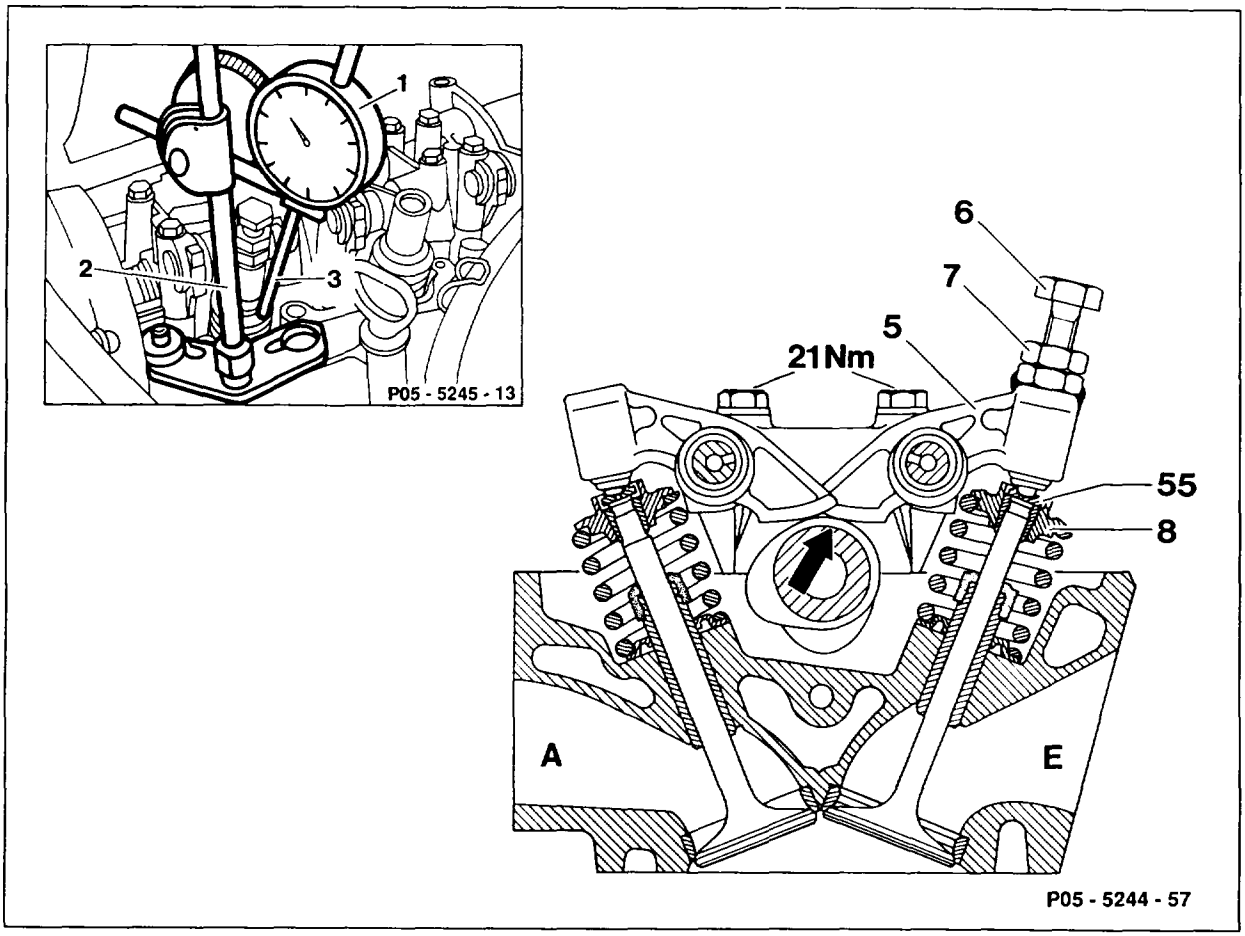
05–2150 Checking camshaft timing

Preceding work:
Cylinder head cover removed (01–0500).
Spark plugs removed (15–1031).



Inlet cam at cylinder 1	position so that only base circle (arrow) is resting against rocker arm (5).
To do this:	
Crankshaft	rotate in direction of rotation of engine with size 27 hexagon socket and torque wrench 000 589 10 99 01.
Camshaft code number	check (see note).
Rocker arm at inlet valve of cylinder 1	remove (05–2230).
Rocker arm (5) with ball socket (55)	install (see shop-made tool).
Setting bolt (6)	turn to eliminate valve clearance.
Setting bolt (6)	secure with locking nut (7).
Dial gauge holder (2) 136 589 04 21 00	fit onto cylinder head.
Dial gauge (1) with tracer pin (3)	insert into dial gauge holder (2).

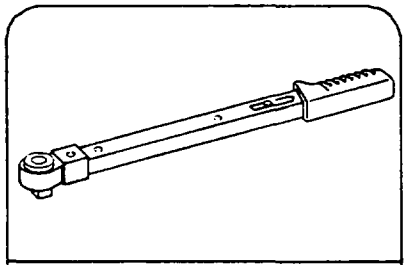
Tracer pin (3)	set on valve spring retainer (8) vertically and with a preload of 3 mm.
Large pointer of dial gauge (1)	set to "0".
Crankshaft	rotate in direction of rotation of engine.
At a valve lift of 2 mm, the value at the vibration damper must agree with the value in the table	"inlet valve opens after TDC".
Camshaft timing	adjust (05–2152).

Timing in °CA at 2 mm valve lift

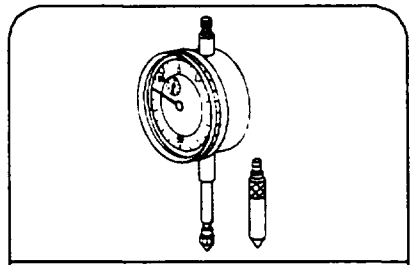
Engine	Code number of front camshaft stamped in camshaft flange	Inlet valve		Exhaust valve	
		opens after TDC	closes after BDC	opens before BDC	closes before TDC
103 außer 103.984	18, 36[2]) 19[1]), 37[1])[2])	11.5°	17.0°	18.5°	13.5°
	22[3]), 42[4]), 49[5]) 23[1])[3]), 43[1])[4]), 50[1])[5])	11.5°	19.5°	21.5°	13.5°
103 983 AMG	–	15°	–	–	17°
103.94 only Belgium 115 kW	20 21[1])	16°	0.5°	19.0°	14.5°
	30[3]), 44[4]), 56[5]) 31[1])[3]), 45[1])[4]), 57[1]),[5])	6.5°	14.0°	26.5°	18.5°
103.984	53[6]) 54[1])[6])	16.5°	24°	21.5°	13.5°

[1]) Repair camshaft with 0.5 mm larger bearing diameter.
[2]) USA 1986.
[3]) Installed since 05/86 (M7 thread) for attaching camshaft sprocket.
[4]) Camshaft tin-coated, cam 1 mm wider, standard as of 10/86.
[5]) Chilled cast iron camshaft, as of 02/89 (driver mount 20 mm dia.).
[6]) 103.984 as of 03/89 (driver mount 20 mm dia.).

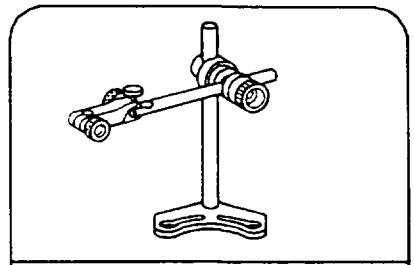
Special tools



000 589 10 99 01



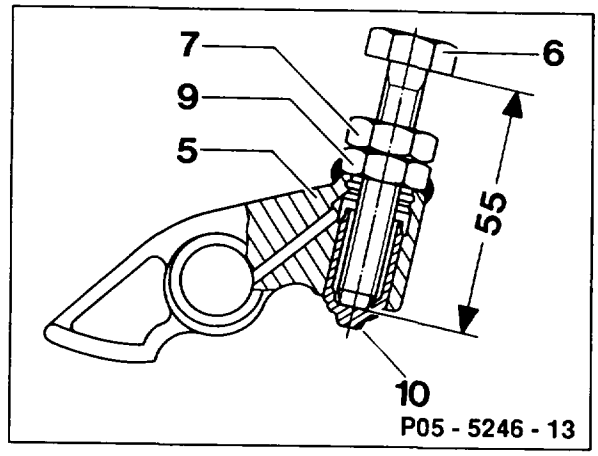
001 589 53 21 00



136 589 04 21 00

Shop-made tool

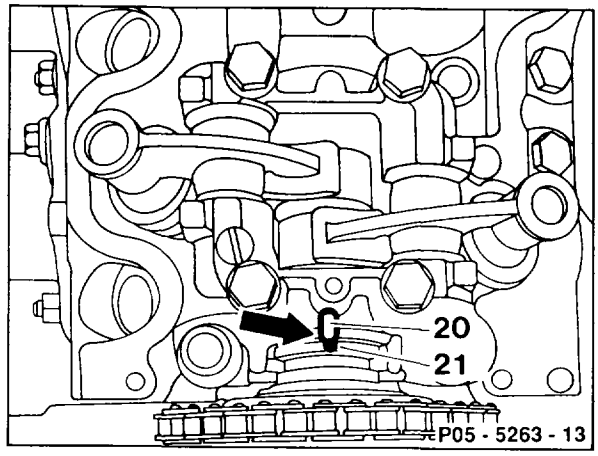
Rocker arm with nut welded on and setting bolt with lock nut for eliminating valve clearance.



5 Rocker arm, engine 103
6 M10×55 bolt
7 M10 locking nut
9 M10 nut welded onto rocker arm
10 Compensating element guide sleeve

Notes

When performing removal and installation operations, it is sufficient to check the basic position (marking 20 and 21) of the camshaft (see 05–2230).
Re-set timing if the difference is more than 2° crank angle (05-2152).



The camshaft code number is stamped in the camshaft flange (arrow).