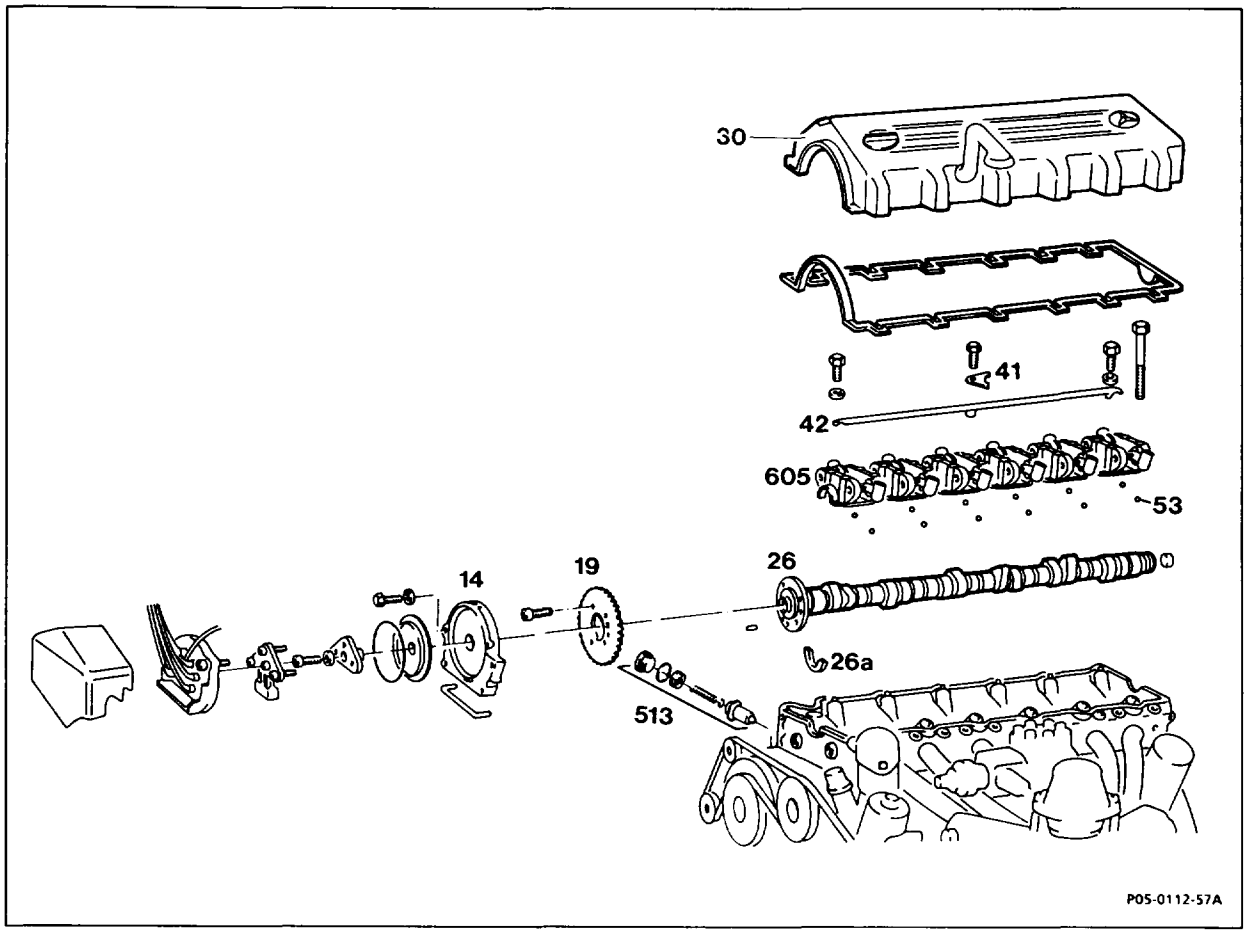
05–2200 Removing and installing camshaft

Preceding work:
Air cleaner removed (09–1051).
Cylinder head cover removed (01-0500)
Front cover at top removed (01-2120).
Camshaft oil pipe removed (18-4200)

Operation no. of operation texts and work units or standard texts and flat rates
05–5521, 05–5541, 05–6292 up to 05–7050



Piston of cylinder 1	set to TDC (step 1)
Camshaft gear (19)	mark relative to camshaft (26) (step 2)
Chain tensioner (513)	remove, install (05-3100)
Camshaft gear (19)	remove, install (step 4, pay attention to note)
All camshaft bearing caps (605) together with rocker arms	remove, install (05-2190)
Camshaft and rocker arm friction surfaces	oil
Camshaft (26)	lift out, insert. Pay attention to thrust washer (26a) (step 6)

Basic position of camshaft (26) . . . . . check (05-2230).
Camshaft lubrication when engine running . . . . . check (step 10).

Notes

Modified camshaft gear
Modified camshaft gears with holes (previously slots) and securing bolts with a higher strength of 10.9 are fitted in order to avoid the securing bolts slackening.

Camshaft gear 2nd version, production breakpoint: 06/1985

Model	Engine	Engine end no.		Vehicle ident end no.	
		man. transm.	autom. transm.	A	F
124.030	103.980	000731	003012	047987	*

* not recorded

Modification to camshaft and camshaft gear
The modified shape of cam permits an engine speed which is 200 rpm higher.

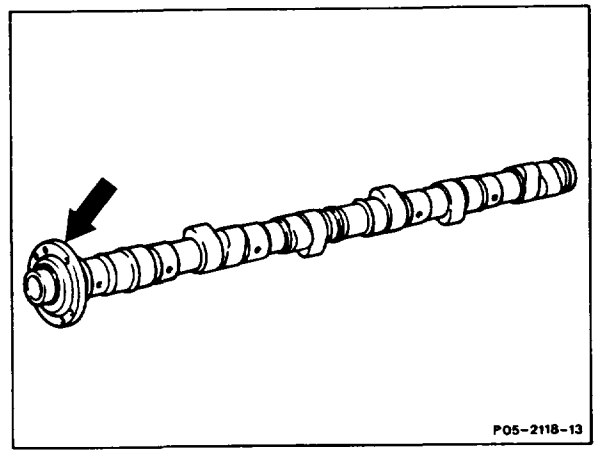
The mounting holes in the camshaft gear have a diameter 7.5 mm (previously 6.4 mm). The camshaft flange is provided with an M7 thread (previously M6) for attaching the camshaft gear. The tightening torque is 16 Nm (previously 10 Nm).

M7 thread in camshaft flange, production breakpoint: 05/1986

Model	Engine	Engine end no.		Vehicle ident end no.	
		man. transm.	autom. transm.	A	F
107.041	103.982	000495	002463	050167	*
124.026	103.940	004621	007048	247878	*
124.030 124.090	103.983	005188	029831	249195	*
126.020	103.941	000951	003725	254136	*
126.024 126.025	103.981	001986	015232	255612	*
201.029	103.942	from start of production		229220	*

* not recorded

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



Camshaft with modified timing

Camshafts with modified timing are installed in engines fitted with automatic transmission. The inlet cams are retarded 5° CA (code number 53).

Inlet camshaft +5°, production breakpoint: 05/1989

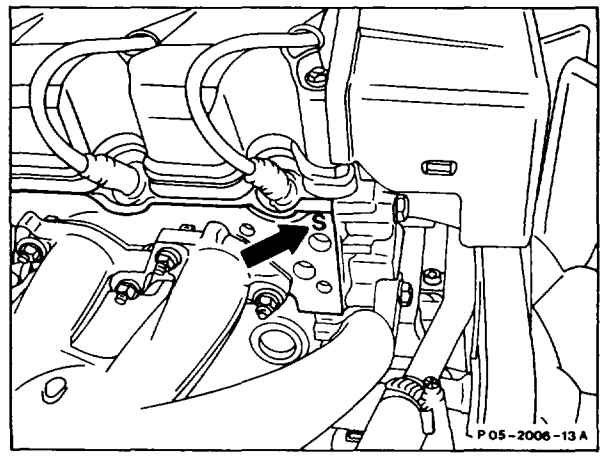
Model	Engine	Engine end no.		Vehicle ident end no.	
		man. transm.	autom. transm.	A	F
124.026	103.940	*	066138	*	*
124.030 124.050 124.090	103.983	*	168786	*	*
124.230 124.290	103.985	*	007837	*	*
201.029	103.942	*	030695	*	*

* not recorded

Modifications to camshaft, rocker arms and driver

Since 03/1989 chilled cast camshafts and rocker arms with hard metal friction surface have been fitted to all engines. See (05-2320) for production breakpoint.

Provisional identification: "S" (arrow) on contact surface of cylinder head at exhaust end. If chilled cast camshaft is retrofitted, the engine in question should be identified with an "S".



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When performing repairs, only chilled cast camshafts may be installed. The chilled cast camshafts may only be fitted together with rocker arms with hard metal coating (standard as of 03/1989) and the modified driver (see 05-2170) for the distributor rotor.

Inductively hardened camshafts may only be used in combination with hard chrome-plated rocker arms (standard up to 02/1989).

If bearing fretting or severe scoring exists, the camshaft bearings in the cylinder head and in the rocker arm bearing brackets can be widened 0.5 mm by drilling and a camshaft with oversized bearing journals installed.

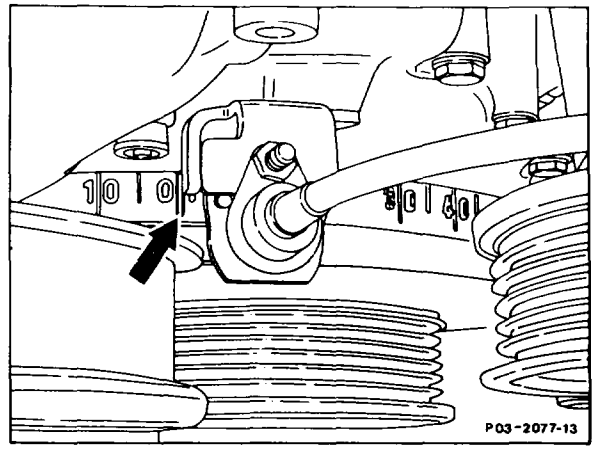
After damage to a cam (eg. worn cams), all the affected timing parts (hydraulic elements, valves, valve springs, valve heads and valve cotters) should be checked for signs of damage.

If individual rocker arm bearing brackets are renewed, all the bearing brackets must be tightened to specification and the camshaft checked to ensure that it moves freely (rocker arms removed).

If camshaft damage has occurred as a result of an oil deficiency resulting from a loose oil nozzle return lock without stop shoulder, an oil nozzle return lock with stop shoulder must be fitted (standard as of 12/1986) (18-4150).

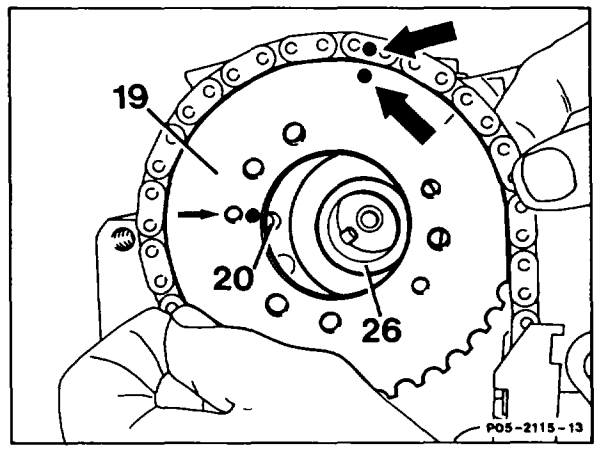
Removal, installation

1 Position piston of cylinder 1 to TDC (arrow).



2 Mark position of camshaft gear (19) relative to camshaft (26) and to timing chain (arrows). This is done by applying colored markings next to the locating pin (20) at the camshaft gear (19) and at the timing chain.

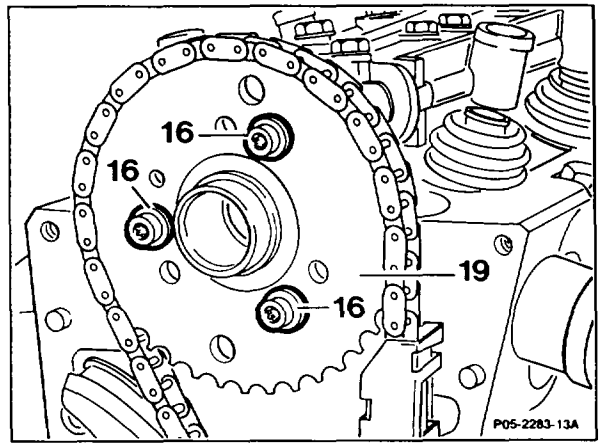
Note
If the camshaft gear is replaced, the colored markings must be applied to the same point on the new camshaft gear (19).



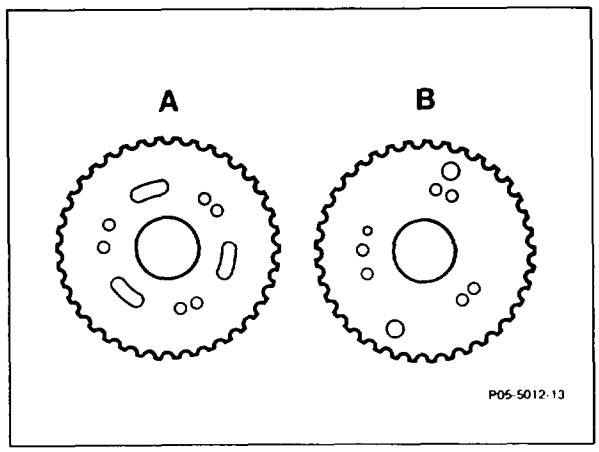
3 Remove chain tensioner (05-3100).

4 Unbolt camshaft gear (19) and pull off by hand.

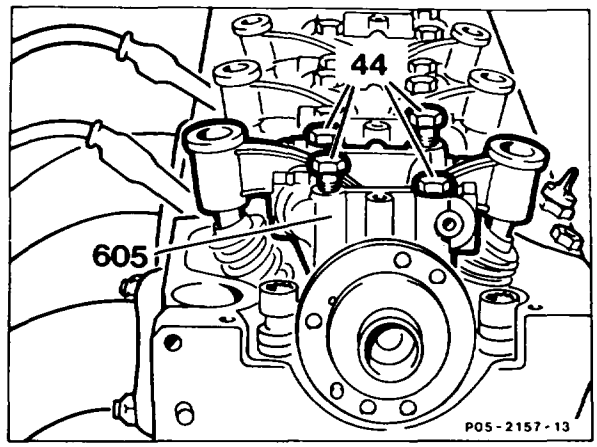
Tightening torque		
Hexagon socket bolts	M6	11 Nm
Torx bolts	M7	16 Nm



Note
The camshaft gear with 3 slots (A) 1st version should be replaced with the camshaft gear 2nd version (B) with 3 holes each Ø 6 mm when performing repairs.
The camshaft gear 2nd version (B) can be used in place of the camshaft gear 3rd version with 3 holes each Ø 7 mm when performing repairs; in this case, the 3 holes Ø 6 mm should be widened to Ø 7 mm.

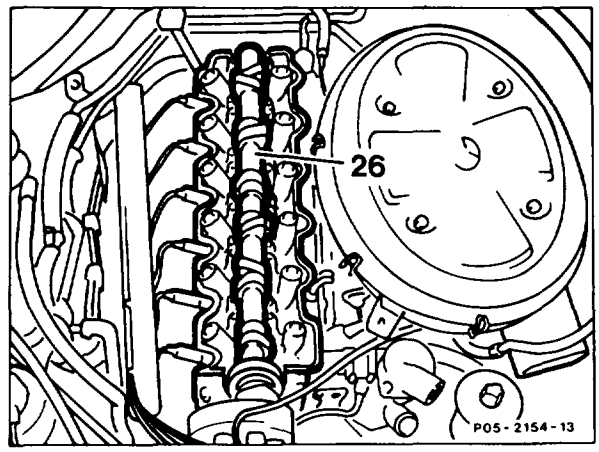


5 Unbolt camshaft bearing caps (605) (05-2190).



6 Lift out camshaft (26).

Note
Pay attention to the thrust washer at the front (axial mounting) when lifting out camshaft.



7 Oil camshaft bearing journals.

8 install in the reverse order.

9 Check basic position of camshafts (05-2230).

10 Check oil supply (direction of spray) of camshaft at idle speed.