General information

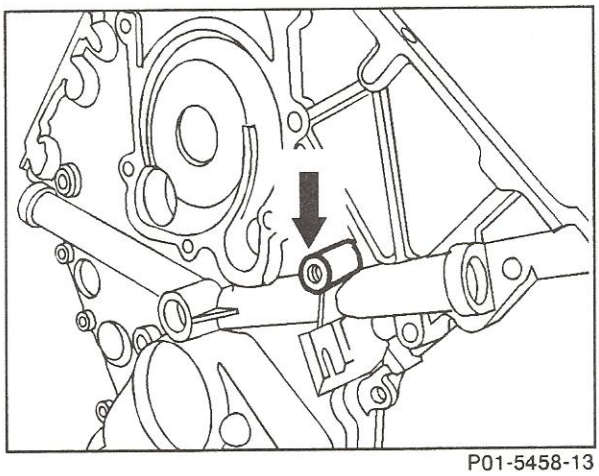
Engine 119.972 in model 129.067 (500 SL) replaces engine 119.960 (model 129.066) and is essentially identical in construction to engine 119.970 (500 SEL).

The following important innovations and modifications to engines 119.97 were performed with the goal of further improving fuel economy.

Cylinder crankcase, cylinder head, crankcase ventilation

Cylinder crankcase/timing chain housing cover
The air injection passages were increased in diameter from 12 mm to 14 mm.

In addition, a threaded mount (arrow) was cast onto the timing chain housing cover for attaching the new poly-V-belt tensioner.



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Cylinder heads
The bores for the valve guides were decreased in diameter from 13.5 mm to 12.5 mm.

Crankshaft, piston assembly

Pistons

The pistons were reduced in weight.
The height of the top land and the piston ring grooves were lowered.

The compression ratio was raised in engines 119.971/975.
In addition, these pistons feature asymmetrically shortened shanks.

Piston data [1]

Engine	119.971/975		119.970/972/974	
Compression ratio	11.0	(10.0)	10.0	
Top land height	5.5 mm	(8.2 mm)	6.0	(8.2)
Wrist pin offset	0.8 mm	(1.2 mm)	1.2	
Height of piston ring groove 1	1.5 mm		1.5	(1.75)
Height of piston ring groove 2	1.75 mm	(2.0 mm)	1.75	(2.0)
Height of piston ring groove 3	3.0 mm	(3.5 mm)	3.0	(3.5)

[1] The values in parentheses apply to the previous pistons of comparable engines.

Piston rings

The pistons rings were lowered according to the modified position of the piston ring grooves and, in addition, the land width and tangential force of the piston rings was reduced (see table "Piston data").

Crankshaft bearing shells

With the exception of the thrust bearing, the width of the bear shells was reduced by 4 mm.

Connecting rod bearing shells

The width of the bearing shells was reduced by 2 mm.

Crankshaft

The balancing of the crankshaft was adapted to the modified moving masses.

Engine timing, valve train

Valve guides
The outside diameter was reduced from 13.5 mm to 12.5 mm.

Valve springs
The valve springs are conical in design. The valve spring force differs between the 4.2 and 5.0 liter engines.

Valve spring retainers
The upper and lower valve spring retainers were adapted to the conical valve springs.

Camshaft
The cam shape was modified resulting in reduced valve lift as well as modified valve timing and modified camshaft identification.

Bucket tappets
Weight reduced from 82 g to 64 g.
The oil return check was deleted.

Valve timing

Valve timing in degrees of crankshaft angle at 2 mm valve lift 1) with new timing chain

Engine	Identification number of camshafts 2)				Intake valve 3)		Exhaust valve	
	Intake camshaft		Exhaust camshaft		Opens	Closes	Opens	Closes
	right	left	right	left	after TDC	after BDC	before BDC	before TDC
119.970/ 972/974	98	96	02	00	33.0°	42.0°	10.0°	11.0°
119.971/ 975	90	88	94	92	30.0°	–	8°	–

1) Permissible deviation: ±2,0° crankshaft angle. Perform test only with valve running up on cam in direction of engine rotation.
2) Camshaft identification number stamped in front of 3rd camshaft journal or stamped with paint on rear of camshaft flange.
3) Camshaft timing adjuster in position "retard".

LH sequential multiport fuel injection system (LH-SFI)

Diagnostic module (DM)

Engine 119
See "Engine 104 LH-SFI".

Engine 119.972 in model 129

General information
Operation of the LH sequential multiport fuel injection system (LH-SFI) is described in the Model Year 1992 Introduction Manual for model 140.

LH-SFI control module

Engine 119
Wide open throttle (full load) enrichment has been deleted.

Injectors

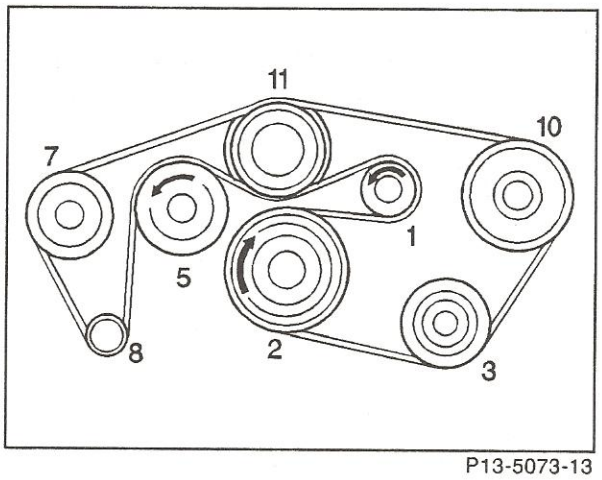
Engine 119
See "Engine 104 LH-SFI".

Belt drive

Poly-V-belt and belt pulleys

6-groove single belt drive.
Poly-V-belt length: 2535 mm.
The belt thickness was reduced by 1 mm. Improved belt material has increased the life expectancy of the belt.

All of the belt pulleys were converted to the 6-groove version. The generator (alternator) pulley was changed to measure 88 mm in diameter.



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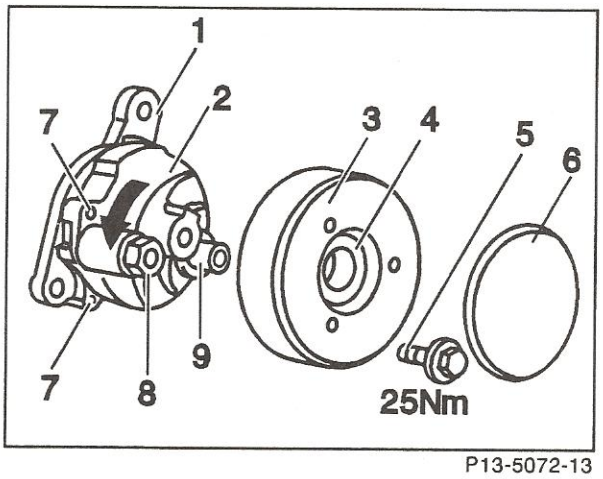
1 Tensioning pulley
2 Crankshaft
3 A/C compressor
5 Engine fan
7 Secondary air injection pump
8 Generator (alternator)
10 Power steering pump
11 Coolant (water) pump

Belt tensioner

The belt tensioner has been redesigned.
Belt tension is provided by a preloaded, self-damping coil spring (arrow in illustration indicates tension direction).
The coil spring is mounted in a two-part riveted aluminum die-cast housing consisting of a tensioning housing (1) and a tensioning arm (2).
The sheet steel tensioning pulley (3) is axially (not radially) mounted on the journal (9) with an angular-contact ball bearing (4).
When replacing the poly-V-belt, the belt tensioner is turned (opposite direction of arrow) at the tensioning arm (2) with 17 mm hex. head (8) and can be held in preloaded position using a pin in either of the 6 mm dia. bores (7).
The tapered roller bearing is protected by a closure cap (6).



P13-5072-13

1 Tensioner housing
2 Tensioning arm
3 Tensioning pulley
4 Tapered roller bearing
5 Screw
6 Closure cap
7 6 mm diameter bore
8 17 mm hex. head
9 14.5 mm diameter journal