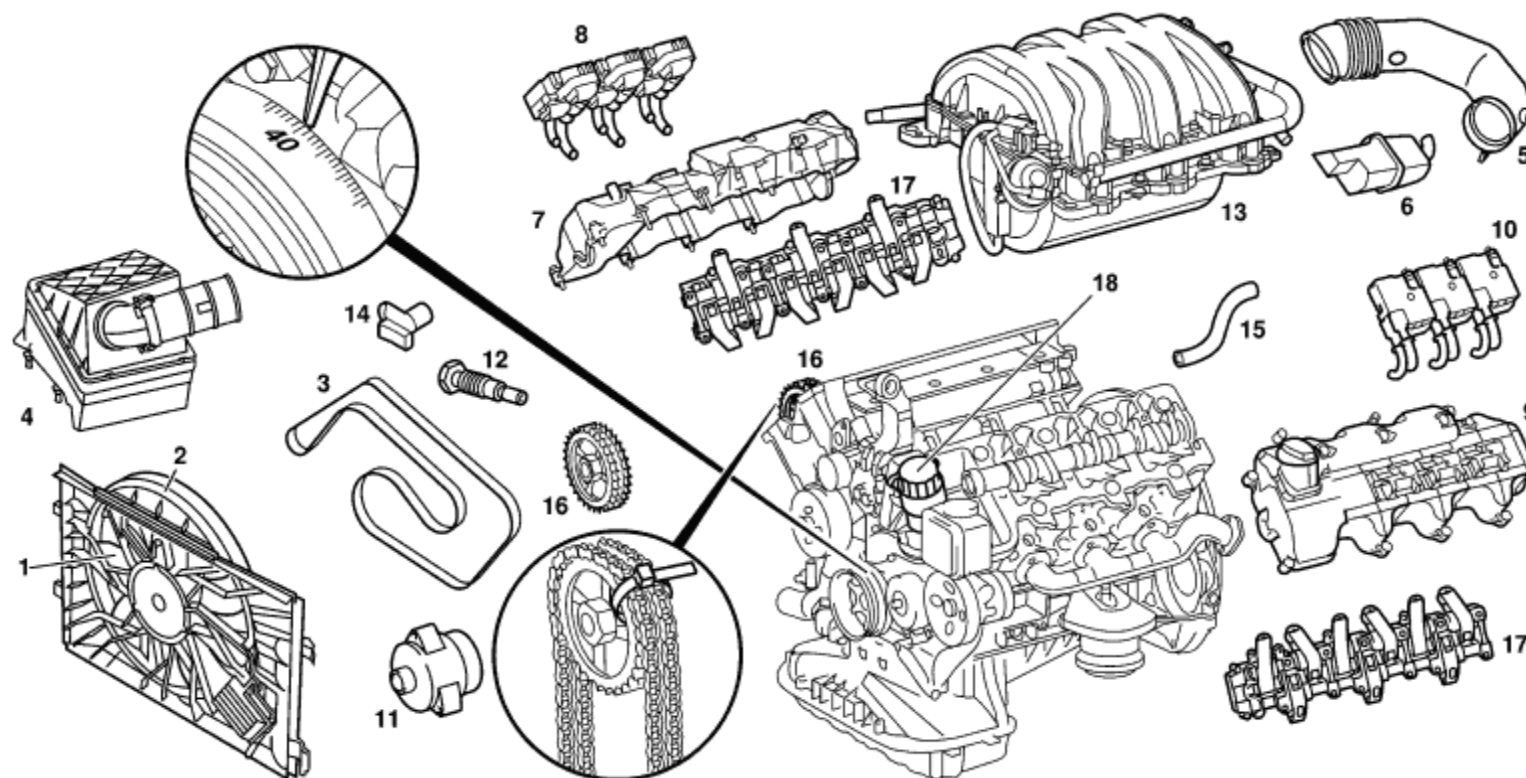


AR01.30-P-5800BA

Remove/install cylinder head

4.1.01

ENGINE 112 in MODEL 202



P01.30-2092-09





Shown on model 220 with Engine 112




- 1 Electric fan
- 2 Fan shroud
- 3 Poly-V-belt
- 4 Air cleaner housing
- 5 Resonance pipe
- 6 Resonance body
- 7 Right cylinder head cover
- 8 Right ignition coils
- 9 Left cylinder head cover











- 10 Left ignition coils
- 11 Generator
- 12 Chain tensioner
- 13 Intake manifold
- 14 Camshaft position sensor
- 15 Coolant line
- 16 Camshaft sprockets
- 17 Camshaft bearing bridges
- 18 Oil filter housing with oil-water heat exchanger










20 Bolts cylinder head→timing case cover  
 21 Cylinder head bolts M11x141.5  
 22 Cylinder head left  
 23 Cylinder head right  
 24 Left cylinder head gasket  
 25 Right cylinder head gasket  
 26 Dowel sleeves











P01.30-0299-06













	Remove/Install		
	<b>Risk of explosion</b> from explosive gas. <b>Risk of poisoning and caustic burns</b> from swallowing battery electrolyte. <b>Risk of injury</b> through burns to skin and eyes from battery acid or when handling damaged lead-acid batteries	No fire, sparks, open flames or smoking. Wear protective gloves, acid-resistant clothing and safety glasses. Pour battery electrolyte only into suitable and appropriately marked containers.	<a href="#">AS54.10-Z-0001-01A</a>
1	Disconnect ground cable of battery		<a href="#">AR54.10-P-0003A</a>
		 Turn key in electronic ignition switch EIS into position "0". Key cannot be withdrawn.	
		 Vehicle fitted with code (889) Keyless-	

		Go: Switch off engine, remove Keyless-Go cards from the vehicle and store outside of transmitter range	
		<b>i</b> <b>Installation:</b> After connecting, read out fault memory, set time at instrument cluster, code radio, synchronize power windows and tilting/sliding roof and activate steering angle sensor. Vehicles with stationary heater: adjust time display on stationary heater.	
	Notes on battery		<a href="#">AH54.10-P-0001-01A</a>
2	Remove engine compartment paneling		<a href="#">AR61.20-P-1105AB</a>
 <b>Danger!</b>	<b>Risk of injury</b> to skin and eyes suffering scalding from contact with hot coolant spray. <b>Risk of poisoning</b> from swallowing coolant.	Do not open cooling system unless coolant temperature is below 90 °C. Open cap slowly and release the pressure. Do not pour coolant into beverage bottles. Wear protective gloves, protective clothing and eye protection.	<a href="#">AS20.00-Z-0001-01A</a>
3	Drain coolant	<b>i</b> At radiator.	<a href="#">AR20.00-P-1142HA</a>
4	Attach guard plate for radiator / condenser		
 <b>WF</b>	Guard plate for radiator / condenser		<a href="#">WF58.50-P-0110-01A</a>
5	Remove resonance pipe (5) together with resonance body (6)	Separate plug connection of hot film mass air flow sensor (HFM-SFI) for this step and  Unbolt resonance pipe at cylinder head cover.	
		<b>i</b> The resonance pipe is attached at the rear at the intake manifold with a plastic plate.	
		<b>i</b> Do not damage the plastic strap.	
6	Remove hot film mass air flow sensor (HFM-SFI)	All except model 202.033	<a href="#">AR07.07-P-1454A</a>

 <b>Danger!</b>	<b>Risk of explosion</b> if ignition takes place, <b>risk of poisoning</b> caused by inhaling fuel vapors or swallowing fuel as well as <b>risk of injury</b> to skin and eyes exposed to fuel.	No fire, sparks, naked flames or smoking. Pour fuels only into suitable and appropriately marked containers. Wear protective clothing when handling fuel.	<a href="#">AS47.00-Z-0001-01A</a>
7	Disconnect fuel line at fuel rail	 Release fuel pressure through service valve!	
		Collect fuel!	
		 M112	<a href="#">BA07.52-P-1001-01A</a>
		 Pressure hose	<a href="#">119 589 04 63 00</a>
8	Remove ignition coils (8, 10)	All except model 202.033	<a href="#">AR15.12-P-2003A</a>
9	Remove cylinder head covers (7, 9)	All except model 202.033	<a href="#">AR01.20-P-5014B</a>
10	Remove intake manifold (13)		<a href="#">AR09.20-P-1310A</a>
		 Remove intake manifold together with fuel rail.	
		 The intake manifold system must not be disassembled.	
		 <b>Installation:</b> On vehicles with engine damage, the intake manifold must be examined for swarf before installing and any swarf present must be removed, otherwise the following engine damage would be preprogrammed.	
11	Remove camshaft position sensor (14)	 Only necessary if the right cylinder head is removed.	<a href="#">AR15.10-P-2000A</a>
12	Remove poly V-belt (3)	 <b>Installation:</b> Lock tensioning device with a drift or pin (diameter 5 mm).	<a href="#">AR13.22-P-1202B</a>
13	Detach coolant line (15) at left cylinder head	 On model 202.033 an additional coolant line is attached at the right cylinder head. The coolant line of the right cylinder head	

		runs to an external transmission oil cooler which is located on the right behind the front molding.	
		 Wrench hexagon	<a href="#">WH58.30-Z-1001-06A</a>
		 Wrench hexagon	<a href="#">WH58.30-Z-1002-06A</a>
14	Detach exhaust system at exhaust manifold	 <b>Installation:</b> On vehicles with engine damage, the exhaust system must be examined for swarf before installing and any swarf present must be removed, otherwise damage could occur to the catalytic converter.	
		 Nm	<a href="#">BA14.10-P-1002-01B</a>
15	Position crankshaft to 40° after ignition TDC of cylinder 1	 Engine must not be turned back as the timing chain can skip.	<a href="#">AR05.10-P-6858V</a>
		 Rotate engine at crankshaft in direction of rotation of engine until 40° marking on belt pulley/vibration damper is matched with marking on timing case cover. The grooves on the camshafts must be pointing toward the inner V.	
		If no valve timing index marks are indicated on the camshafts, the locating plate is used for setting the valve timing. : ↓	
		 Locating plate	<a href="#">112 589 01 32 00</a>
16	Lock camshafts with locating plates	 Locating plate	<a href="#">112 589 01 32 00</a>
17	Remove chain tensioner (12)		<a href="#">AR05.10-P-7800CA</a>
18	Unbolt camshaft sprockets (16)	 Right-hand camshaft sprocket: Tie timing chain tight on camshaft sprocket with cable strap. Left-hand camshaft sprocket:	

		Mark camshaft sprocket to timing chain and remove camshaft sprocket.	
		 It is not possible for the timing chain to jump across at the crankshaft and balancing shaft.	
		 If the camshaft sprockets are removed, the engine must no longer be cranked otherwise the timing chain might jam.	
		 Open-end wrench	<a href="#">112 589 00 01 00</a>
		 Insertion tool	<a href="#">112 589 01 03 00</a>
		 Torque wrench	<a href="#">001 589 72 21 00</a>
		 Nm	<a href="#">BA05.20-P-1001-01B</a>
		 After installation:↓	
		Inspect basic position of camshafts.	<a href="#">AR05.10-P-6858V</a>
		After inspecting, if necessary:↓	
		Set the basic position of camshafts	<a href="#">AR05.20-P-6020AU</a>
19	Remove camshaft bearing bridges (17)	Engine 112	<a href="#">AR05.20-P-7103AU</a>
20	Unscrew bolts (20) of cylinder head to timing case cover	 Nm	<a href="#">BA01.40-P-1002-01C</a>
21	Slacken cylinder head bolts (21) in stages, unscrew	 Slacken cylinder head bolts according to the tightening patten when engine has cooled off, otherwise the bolts would be overstretched.	<a href="#">AR01.30-P-5800-09B</a>
		 <b>Installation:</b> Observe tightening pattern and tightening instructions of cylinder head bolts. Oil thread and head contact surface of cylinder head bolts.	<a href="#">AR01.30-P-5800-07B</a>

		 Screwdriver bit	<a href="#">000 589 03 10 00</a>
		 Screwdriver bit	<a href="#">000 589 04 10 00</a>
			<a href="#">BA01.30-P-1001-01D</a>
22	Remove cylinder head		
	Information on applying sealant to cylinder head gasket	Engine 112	<a href="#">AH01.30-P-1000-04VA</a>
		Loctite 5900 sealant.	<a href="#">BR00.45-Z-1015-01A</a>
		 The sealant must be applied within 10 minutes.	
	Information on cylinder head contact surface		<a href="#">AH01.30-P-1000-05A</a>
	<b>Inspect</b>		
23	Inspect version of cylinder head gasket	See ↓	
		Assignment of cylinder head gasket	<a href="#">AH01.30-P-1000-06V</a>
24	Check cylinder head bolts (21)		<a href="#">AR01.30-P-5800-03B</a>
25	Clean sealing surfaces, inspect for cracks, shrink holes and flatness, clean threaded holes.	 Sealing surfaces of crankcase and cylinder head are provided with an 0.8 mm thick silicone layer in standard production. Silicone sealant is applied in the gasket area when carrying out repairs only if shrink holes are present.	<a href="#">BR00.45-Z-1015-01A</a>
		 The sealant must be applied within 10 minutes.	
		 Observe dowel sleeves (26) for fixing the cylinder head, otherwise this could lead to a tilting of the cylinder head.	
26	Install in the reverse order		
 <b>Danger!</b>	<b>Risk of accident.</b> Accidents may result if the vehicle starts off unintentionally with the engine running. <b>Risk of injury.</b>	Secure vehicle to prevent it from moving. Wear closed and snug-fitting work clothes. Do not grasp hot or rotating parts.	<a href="#">AS00.00-Z-0005-01A</a>

	Crushing and burn injuries may result while working on engine during when it is being started or when it is in operation.		
27	Run engine and inspect for leaks		
28	Inspect cooling system for leaks	<b>i</b> Warm up engine to operating temperature and then inspect cooling system for leaks.	<a href="#">AR20.00-P-1010HA</a>
29	Read diagnostic trouble code memory and erase		
		<b>i</b> Stored faults which can result from cables being disconnected or from simulation during removal and installation or test work, have to be processed and erased in the fault memories after completing the work: ↓	
		Diagnosis Manual Volume 2, Index 0: Connecting and using test equipment	
		<b>i</b> STAR DIAGNOSIS	

<b>Nm</b> Cylinder head				
Number	Designation	Engine 112.920		
BA01.30-P-1001-01D	Bolt of cylinder head to crankcase	1st stage	Nm	10
		2nd stage	Nm	30
		Step 3	4°	90
		4th stage	4°	90

**Nm** Crankcase, timing case cover, end cover

Number	Designation	Engine 112	
BA01.40-P-1002-01C	Bolt of cylinder head to timing case cover	Nm	20



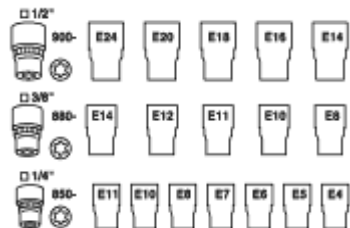
Nm Camshaft					
Number	Designation	Engine 112			
BA05.20-P-1001-01B	Bolt of camshaft sprocket	M12 x 45	1st stage	Nm	50
			Step 2	4°	90

## Nm Fuel rail

Number	Designation	Engine 112	
BA07.52-P-1001-01A	Fuel feed line to fuel rail	Nm	38

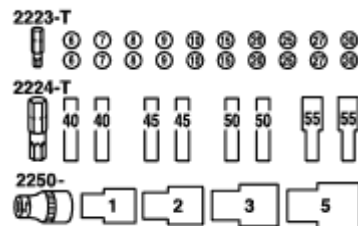
## Nm Exhaust manifold

Number	Designation	Engine 112	Engine 113.944
BA14.10-P-1002-01B	Flange connection of exhaust manifold or front exhaust pipes	Nm	20



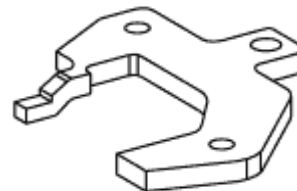
001 589 76 09 00

External Torx set



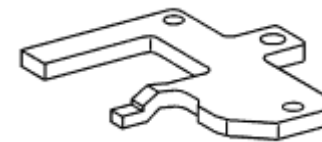
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Torx bit set



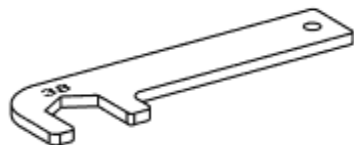
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Locating plate



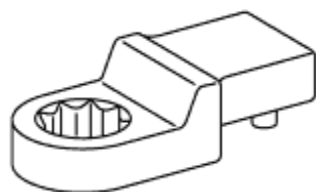
112 589 01 32 00

Locating plate



112 589 00 01 00

Open-end wrench



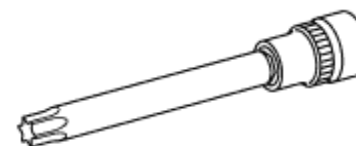
112 589 01 03 00

Insertion tool



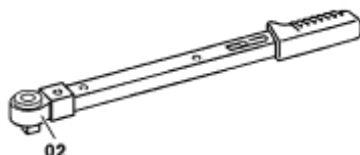
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Screwdriver insert



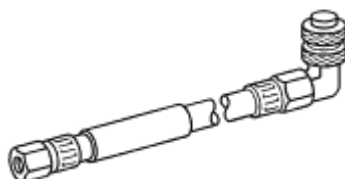
000 589 04 10 00

Screwdriver insert



001 589 72 21 00

Torque wrench



119 589 04 63 00

Pressure hose

<b>Commercially available tools</b> (see Workshop Equipment Manual)			
<b>Number</b>	<b>Designation</b>	<b>Make (e. g.)</b>	<b>Order number</b>
WH58.30-Z-1001-06A	6 mm socket hexagon on flexible shaft for hose clamps with worm drive	Hazet Güldenwerther Bahnhofstraße 25-28 D-42857 Remscheid	426-6
WH58.30-Z-1002-06A	7 mm socket hexagon on flexible shaft for hose clamps with worm drive	Hazet Güldenwerther Bahnhofstraße 25-28 D-42857 Remscheid	426-7

<b>Auxiliary repair materials</b>		
<b>Number</b>	<b>Designation</b>	<b>Order number</b>
BR00.45-Z-1015-01A	Loctite 5900 sealant/50 ml tube	A 002 989 73 20