Job No.

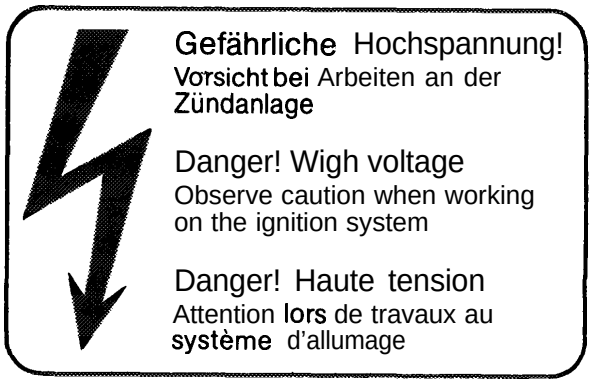
01-008 Opening hood, setting vertical, warnings

⚠

There is risk of injury whenever the engine is running and the hood is open.
The engine is equipped with an electronic ignition system. Because of the high voltage ignition, it is very dangerous to touch ignition system components (ignition coil, distributor, cables, spark plug connector, test socket) if

- the engine is running, or
- the engine is cranked, or
- the key is in position 2 in the steering lock, and the crankshaft is turned by hand.

Observe these cautions when working on the breakerless, solid-state ignition system (15-505).

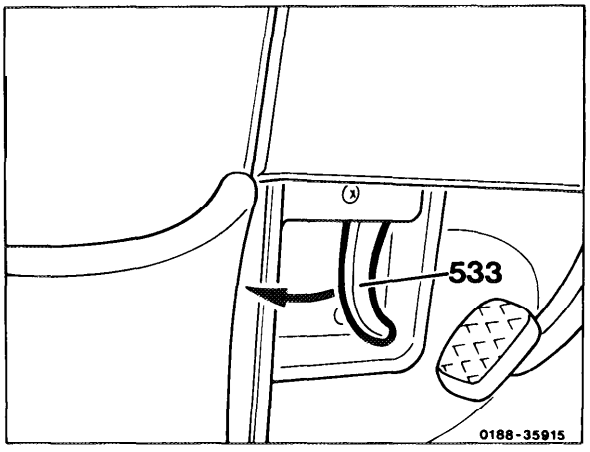


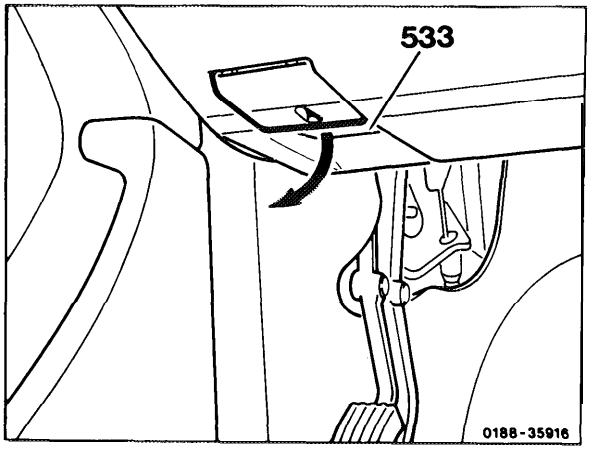
1154-9352

Opening hood

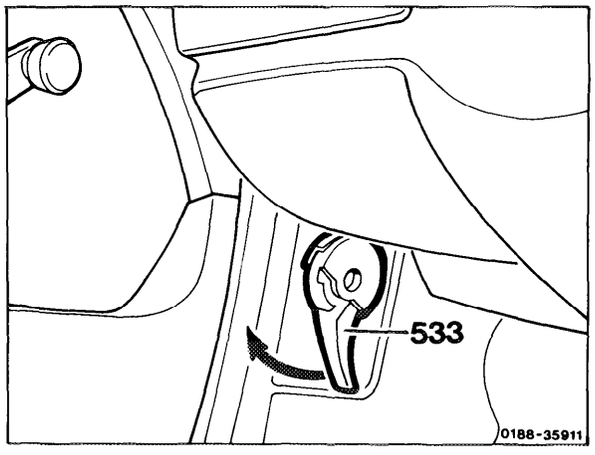
1 To unlock the hood, pull the lever (533) on the left below the instrument panel in the direction of the arrow. The hood opens to the safety hook stop.

Model 107
Model 126





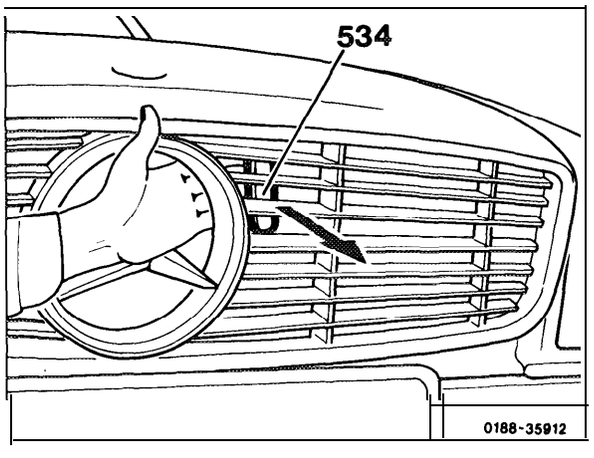
Model 124



Model 201

Model 107

2 Reach through the opening in the grille star and push the lever (534) behind the grille in the direction of the arrow. Open the hood to the stop.



Note:

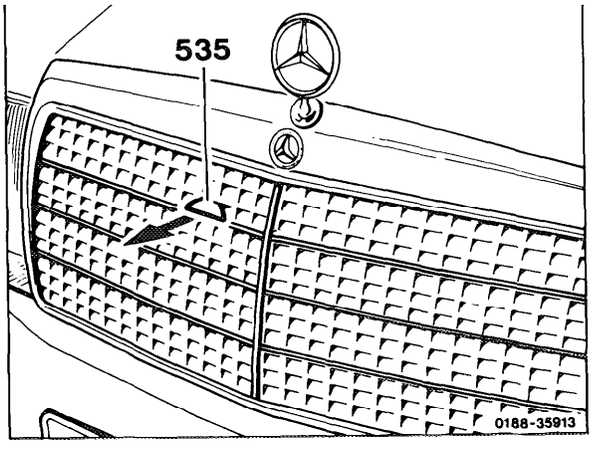
The windshield wiper arm must not be pivoted forward when the hood is lifted.

The **hood on this model cannot be moved into the vertical position.**

3 Close hood by pushing down forcibly.

Model 124, 126, 201

4 Pull the handle (535) extending from the grille as far as the stop and open hood (it may be necessary to lift the hood slightly to release the handle).



Note

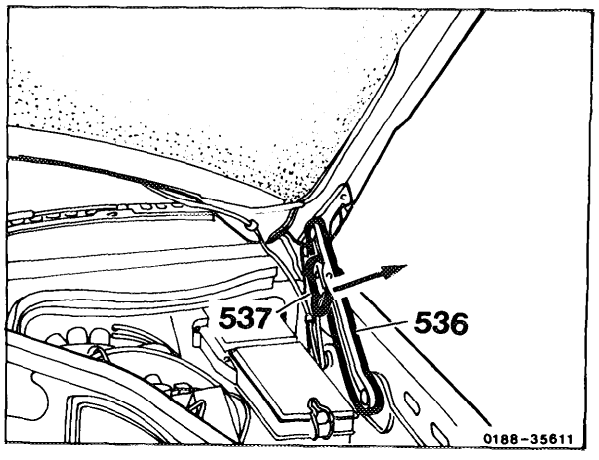
Do not attempt to lift the hood with handle (535).

The windshield wiper arm must not be pivoted forward when the hood is lifted.

Moving hood into vertical position

Model 124 (production up to August 1968)

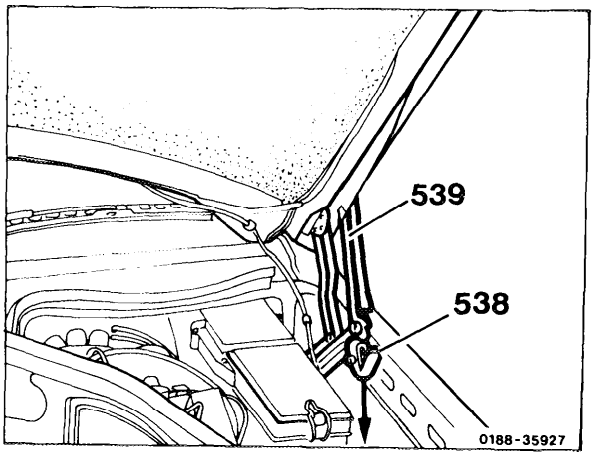
5 Push lock lever (537) on the left hood support (536) in direction of arrow. Lift hood slightly upward to keep the lock lever (537) from reengaging again.
Repeat the preceding at the right hood support and set the hood in a vertical position.



6 To close the hood, push in lock lever at the right hood support, and close the hood by pushing down forcibly.

Model 126

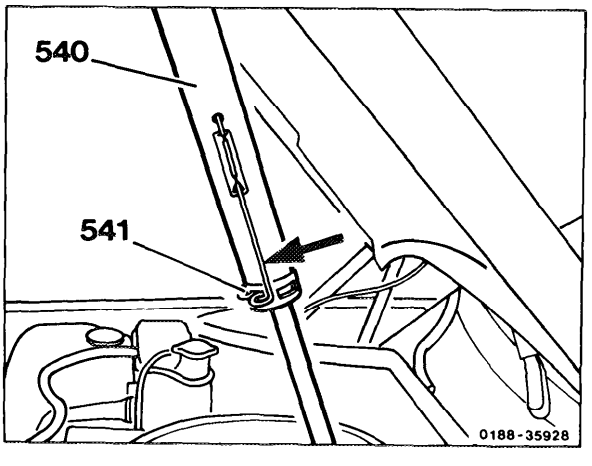
7 Push hood down slightly. Push lock lever (538) on the left hood support (539) down *in* the direction of the arrow. Push hood up slightly to keep the lock lever (538) from reengaging.
Repeat the preceding at the right hood support and set the hood in a vertical position.



8 To close the hood, push the lock lever (538) at the left hood support in the direction of the arrow, and close the hood by pushing down forcibly .

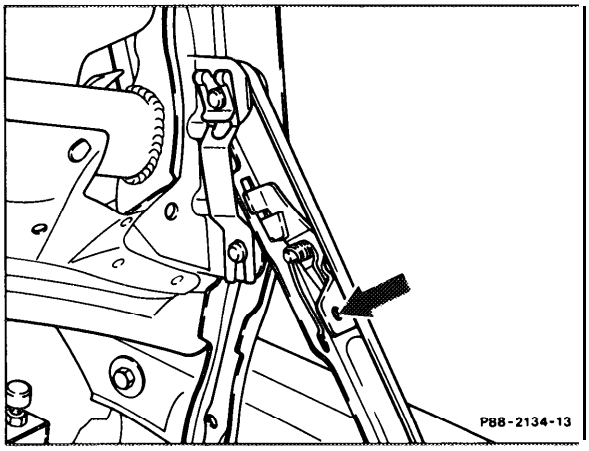
Model 201

9 Pull lock (541) on hood damper (540) in direction of arrow and set the hood in a vertical position.



10 When the hood is set vertical, a lock engages on the left hood support.

11 Close hood. Push in the lock lever (arrow) and close the hood by pushing down forcibly.



01-010 Testing Compression Pressure

Job No. of job texts and job values or standard texts and fiat rates 01-1200

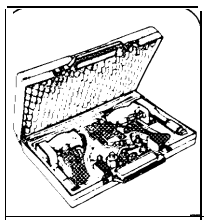
Model 124
Model 129

Test data for engine at normal operating temperature		Pressure
Minimum compression pressure at	Normal compression	approx. 12 bar
	Low compression	approx. 7.5 bar
Allowable difference between cylinders		max. 1.5 bar

Tightening torque

Spark plugs	20 Nm

Special tools



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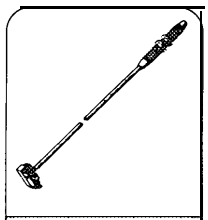

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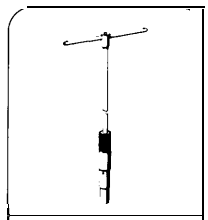

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Note

Test compression pressure at normal operating temperature.

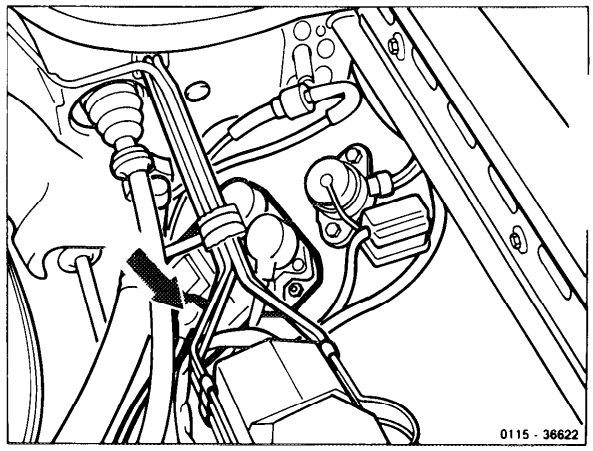
If the pressure reading is below the minimum compression pressure, test cylinders for leaks (01-015).

During the test, have all spark plugs removed.

1 Set hood vertical (01-008).

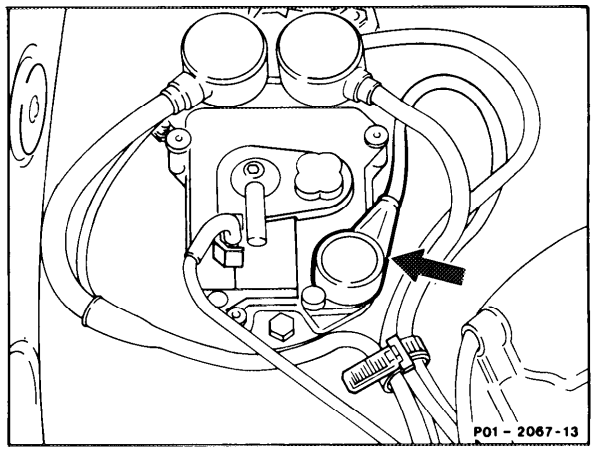
Model 124

2 Turn ignition off and unplug the connector (arrow) for the distributor inductive pickup (green cable) at the control unit.



Model 129

3 Turn ignition off and unplug the connector (arrow) for the distributor inductive pickup (green cable) at the control unit.



4 Unplug all spark plugs.

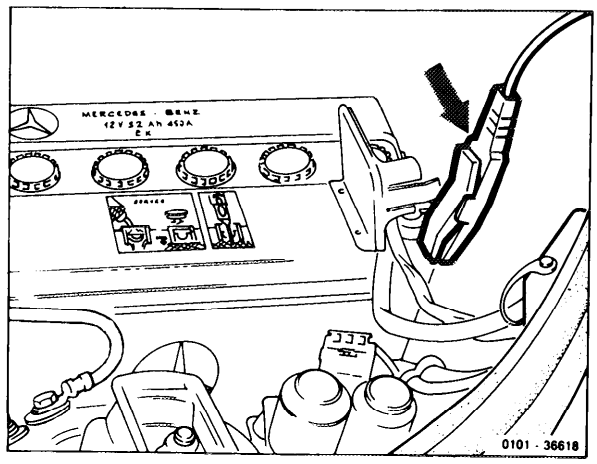
5 Blow out spark plug recesses with compressed air.

6 Remove spark plugs.

Connecting compression pressure recorder

Model 124

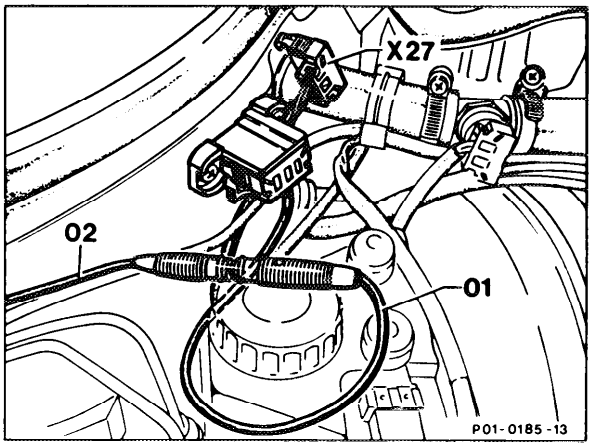
7 Connect an alligator clamp (arrow) from the compression pressure recorder (001 589 76 21 00) to the battery positive cable.



8 Unplug connector (X27) from connector (50).

9 Fit plug (63) of adapter cable 01 124 589 36 63 00 to connector (50).

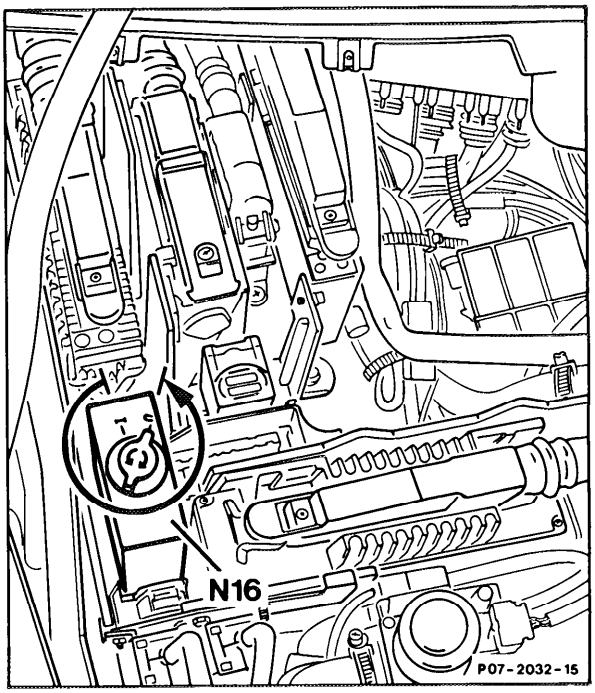
10 Connect adapter cable (01) to the compression pressure recorder cable (02).



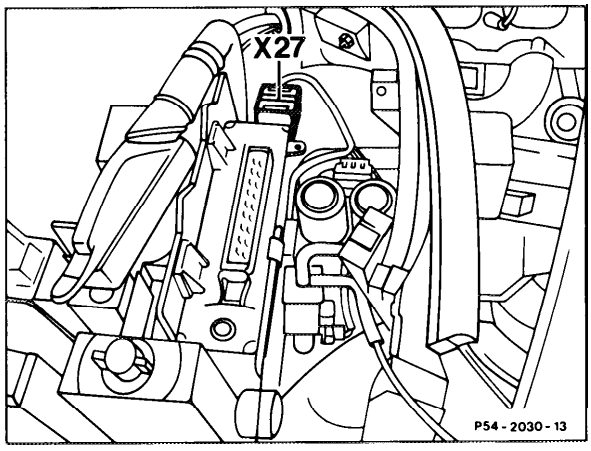
Model 129

11 Remove cover of component compartment.

12 Remove engine component control unit by turning the knob counterclockwise from position 1 to position 0, and remove the control unit upward.

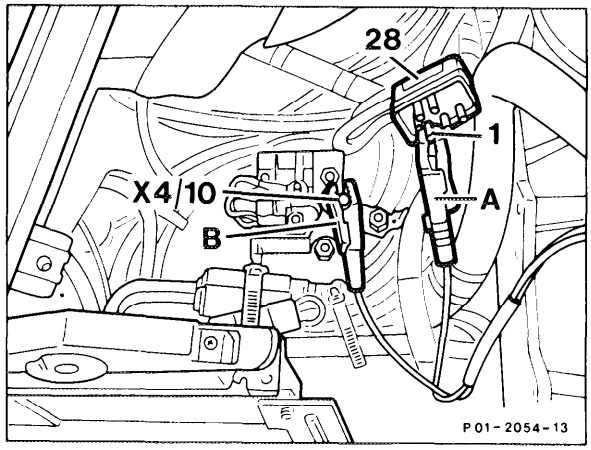


13 Unplug connector (28) at connection (X27).



14 Connect terminal (A) to pin 1 on the connector (28).

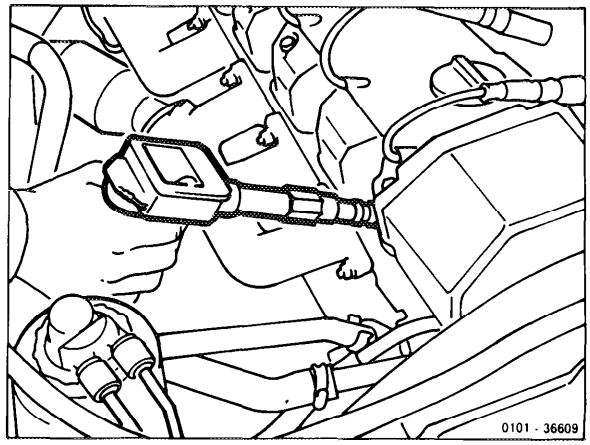
15 Connect terminal (B) to terminal block (X4/10).



Testing

16 With the throttle in the idle position and the parking brake applied, crank the engine with the starter several times to eject debris and soot.

17 Insert the diagram sheets in the compression pressure recorder and start with cylinder 1.



18 To test a specific cylinder, press the compression pressure recorder into the spark plug bore of the cylinder tested, and crank engine through approx. 8 compression strokes. Keep the throttle wide open during the test.

Test all the cylinders this way.

19 Blow out the spark plug recesses with compressed air. Remove residues on the tapered seat.

20 Thread in the spark plugs and tighten to 20 Nm.

01-015 Testing cylinders for leaks

Job No. of job texts and job values or standard texts and fiat rates 01-1300

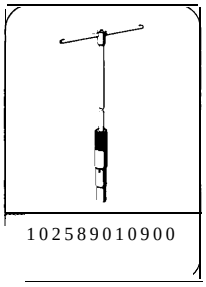
Data

Total pressure loss	max. 25 %
Through valves and cylinder head gasket	max. 10 %
Through pistons and piston rings	max. 20 %

Tightening torque

Spark plugs	20 Nm

Special tools



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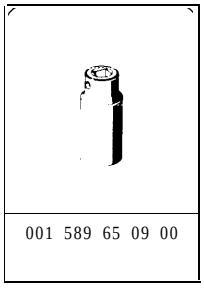


001 589 65 09 00

Commercial tool

Cylinder leak tester	e. g.	Bosch, EFAW 210 A Sun, CLT 228

Testing

1 Run engine until it is at normal operating temperature.

2 Blow out spark plug recesses with compressed air.

3 Remove spark plugs.

Reinstallation note:

Retighten spark plugs to 20 Nm at the completion of the test.

4 Top up coolant and leave coolant expansion tank cap open.

5 Remove oil filler cap.

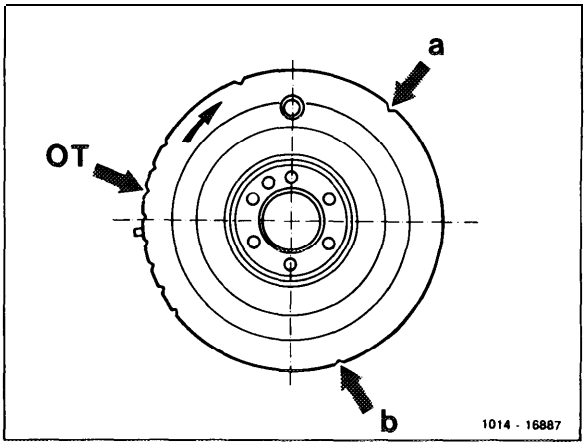
6 Remove air filter (09-400).

7 Connect cylinder leak tester to a compressed air source and calibrate tester.

8 Position the piston of cylinder No. 1 to compression stroke TDC.

A piston is at compression stroke TDC only if its mark (arrows) on the vibration damper, shown in the drawing, is aligned with the TDC pointer and if the distributor rotor points to that cylinder's electrode.

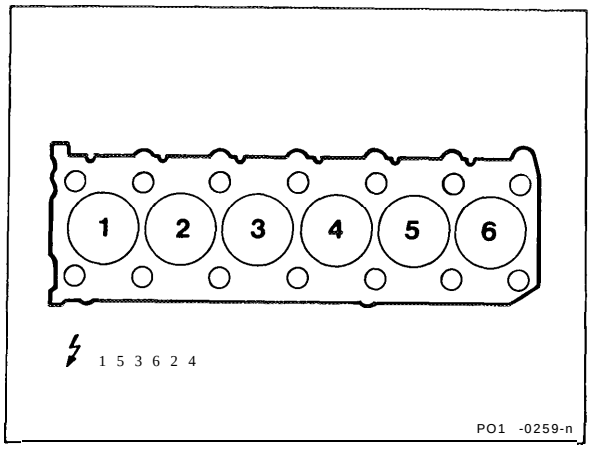
Marking	TDC	b = 120°	a = 240°
Piston in TDC Cylinder	1 or6	2 or 5	3 or 4



9 Thread the connector hose into spark plug hole # 1 and tighten, attach the connector hose of the tester.

Warning:

Keep hands and tools away from the radiator fan and all belts and pulleys during the next step. Pressurize that combustion chamber (approx. 5 bar applied air pressure). The crankshaft must not move during this step. If it does, the piston was not at TDC.



10 Read pressure loss on tester (in %).

11 Move throttle to wide open.

12 Listen to determine whether pressure escapes through the intake manifold, the exhaust, the oil filler opening, a spark plug hole of an adjacent cylinder or the coolant filler opening.

13 Continue test for each cylinder in the engine's firing order (l-5-3-6-2-4).

Note:

It is possible by spraying oil over the piston crown to determine whether the piston rings leak. The oil can temporarily seal the rings, but would have no sealing effect on valves or head gasket leaks.

01-030 Draining, replacing engine (oil capacities)

Job No. of job texts and job values or standard texts and flat rates. 01-2400, 01-2800

A. Models 124 and 124 4MATIC

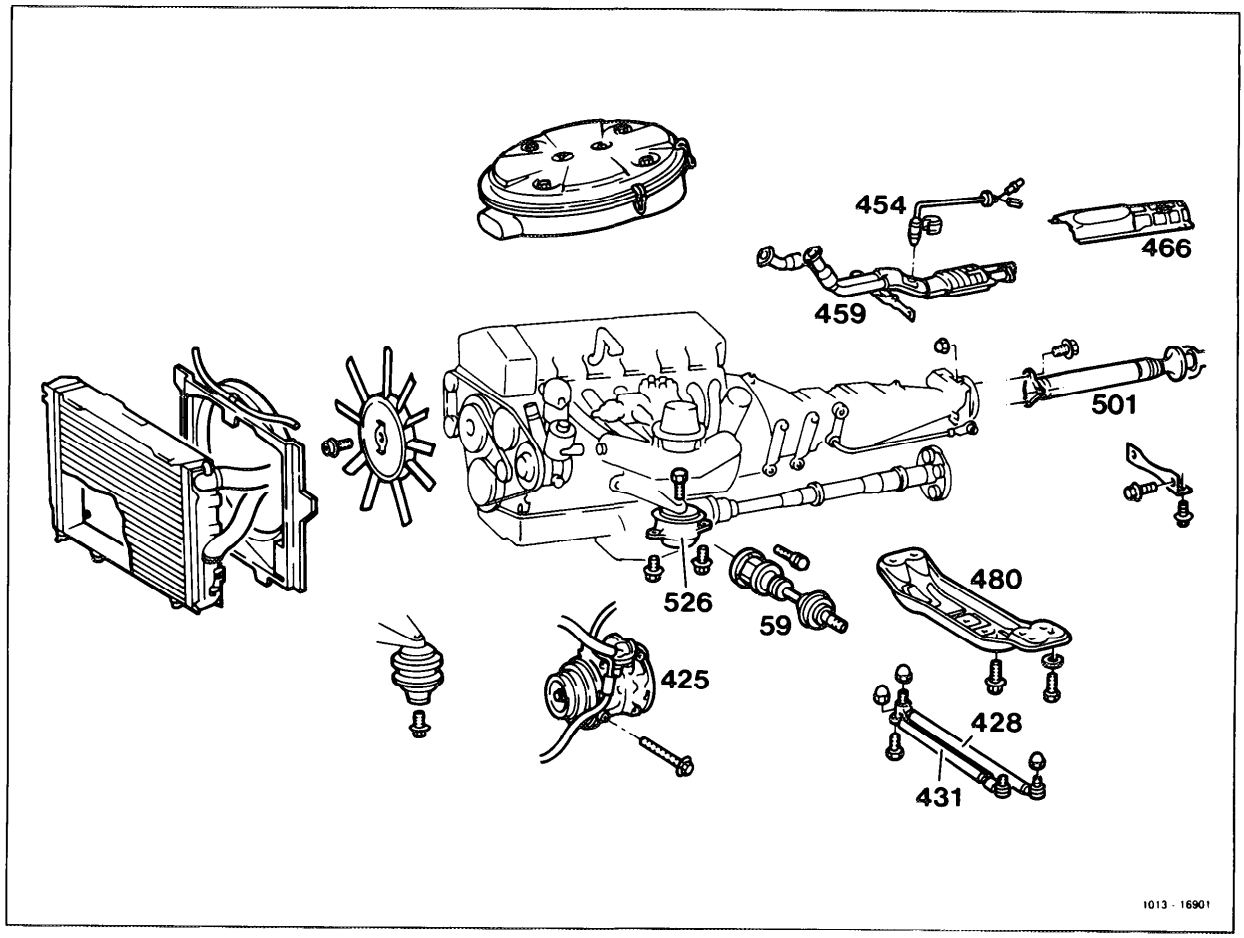


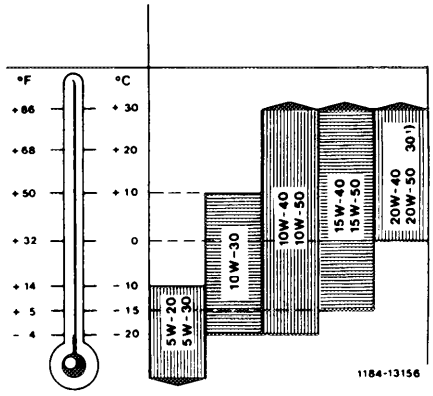
Illustration shows Model 124 4MATIC

Hood	set vertical (0 l-008).
Battery ground cable	disconnect, connect.
Lower engine compartment covering	remove, install (step 3).
Air filter	remove, clean and install (09-400) .
Radiator	remove, install (20-420).
With air conditioning	attach guard plate to condenser, remove and install poly V-belt (13-342).
Viscous fan clutch	remove, install (20-312).

Power steering pump/tandem pump	extract oil from reservoir, top up oil to correct level (46-710).
Oil lines	detach, attach (step 13).
With air conditioning	detach refrigerant compressor (425) with manifold connected, set aside, attach (step 14).
Hydraulic system, high-pressure expansion hose (4MATIC)	vent pressure, move lever on service valve to test position, unbolt and bolt on.
Fuel lines	detach, connect and seal, open fuel filler cap briefly first (step 15).
Bowden cable (accelerator)	detach, attach (30-325) (step 16).
Electrical connections and engine wiring harness	detach, reconnect (steps 17 and 18).
Heating water return line	detach, reconnect.
Oxygen sensor (454)	remove, install (step 27).
Exhaust system and heat shield over exhaust system	remove, install (49-100).
Crossmember (4MATIC)	remove, install (step 29).
Flexible joint on propeller shaft (501)	detach, attach, replace self-locking nuts (step 30).
Clamping nut and center bearing support	slacken, tighten (steps 31 and 32).
Transmission linkage	detach, reconnect (steps 36 and 37).
Starter lockout switch (automatic transmission)	unlock, unplug and reconnect connector (step 37).
Clutch hydraulic line	unbolt, reconnect (step 38).
Center link (428) with steering damper (431)	remove, reinstall, replace self-locking nuts and bolts (46-550).
Front axle shafts (59) left, right (4MATIC)	detach, attach on inside and suspend joints with wire (step 40).
Engine hoist to suspension lugs	connect, disconnect (step 41).
Transmission	support.
Guard plate at component compartment wall	insert, remove.
Rear engine mount (480) without engine mounts	remove, install (steps 44 and 45).
Front engine mounts (526 or 522) left and right	unbolt, install from below (step 46).

Engine with engine hoist	raise, lower (step 47).
Engine mounts, front and rear	check.
Coolant, oil and fuel hoses	check.
With automatic transmission	adjust control pressure cable (27-I 00).
Engine idle speed	check and adjust (017.3-I 00).
Oil drain plugs	check torque.
Oil level in engine and in transmission	adjust to correct level.
Coolant	top up, check anti-corrosion/antifreeze protection and correct (20-010).
Hydraulic system (4MATIC)	bleed (steps 56 to 60).

Specified viscosity classes according to SAE at extended outside temperatures



[1]) At extended outside temperature above + 30 °C SAE 40 may be used.
Precise use of the SAE classes according to the outside air temperatures would necessitate frequently changing engine oil. The temperature limits for the SAE classes should therefore be regarded as a guide which may be transgressed for brief periods.
In moderate climatic zones SAE 40 may be used from April onward for all engine versions.
The following oils may be used as an all-season oil for all gasoline engines
SAE 10 W-40 and SAE 10 W-50

SAE 5 W-20	below + 10 °C
SAE 5 W-30, 10 W-30	all-year-round in moderate climatic zones, i.e. up to + 30 °C
SAE15 W-30	all-year-round in moderate climatic zones

Vehicle components and their respective lubricants must match. Therefore use only brands tested and recommended by us. Inquire at your authorized MERCEDES-BENZ dealer.

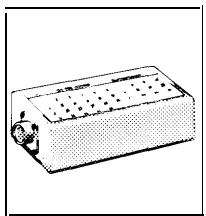
Oil capacities (refer to Service Product Specifications for approved engine oils)

Engine capacity at first filling or after overhaul	7.0 l
Engine capacity when changing oil and filter	6.5 l
Steering gear oil (automatic transmission fluid (ATF) or manual transmission oil)	approx. 0.6 l
Hydraulic oil for self-levelling suspension (refer to Service Product Specifications sheet 343)	approx. 2.0 l

Tightening torques

Driveshaft center bearing to chassis	25 Nm
Air conditioning compressor to engine block	25 Nm
Crossmember to chassis, 4MATIC	25 Nm
Fiexible coupling to driveshaft	45 Nm
Steering damper to center link and chassis	50 Nm
Center link to Pitman arm	35 Nm
Front axle shafts to inboard flange, 4MATIC	70 Nm
l-ligh-pressure expansion hose to tandem pump	30 Nm
Return line to tandem pump	40 Nm
Clamping nut to driveshaft	35 Nm
Engine mount front to engine support	55 Nm
Engine mount front to body, 4MATIC	20 Nm
Engine mount rear to transmission	45 Nm
Engine mount rear to engine mount bow	45 Nm
Engine mount rear to engine support	20 Nm
Engine support rear to chassis	40 Nm

Special tools



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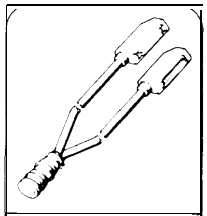

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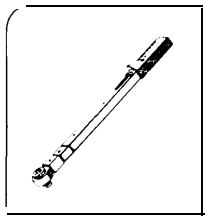

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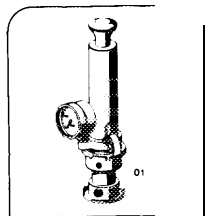

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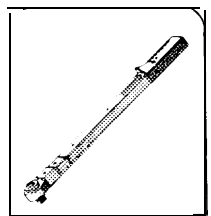

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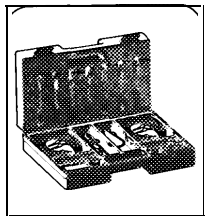

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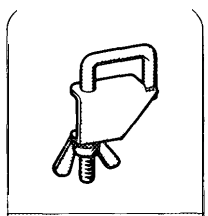
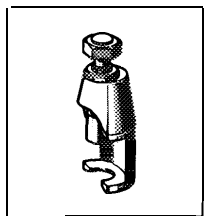


000 589 40 37 00



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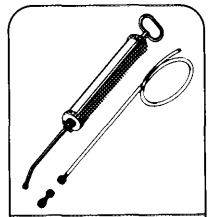

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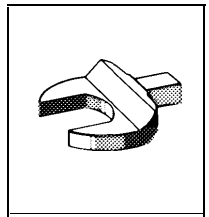


126 589 00 01 00

Commercially available tools

Engine hoist No. 3188 self-locking	e. g. Backer Herder Str. D-5630 Remscheid
Anti-corrosion/antifreeze tester Preston-VU-Check	e. g. Philipp Gather D-4020 Mettmann 2

Shop-made tools

Guard plate for radiator/condenser	Dimensions approx. 480 × 600 × 1
Metal panel for component compartment wall	Dimensions approx. 320 × 380 × 1

Note

Remove and install the engine with transmission attached, with 4MATIC with transfer case and front propeller shaft.

4MATIC reconditioned engines are supplied with an oil pan for shipping. This must be replaced with the original (01-310).

⚠

Do not strike or place a load on lube oil line at the transfer case when engine is positioned at an angle because this can cause it to leak.

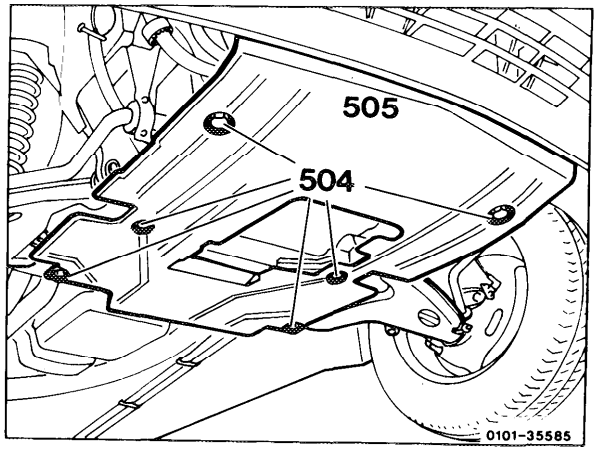
Removal, installation

1 Set the hood vertical (01-008).

2 Disconnect battery ground cable from the battery.

3 Unscrew bolts (504) and remove bottom engine compartment covering (505).

4 Remove air filter (09-400).

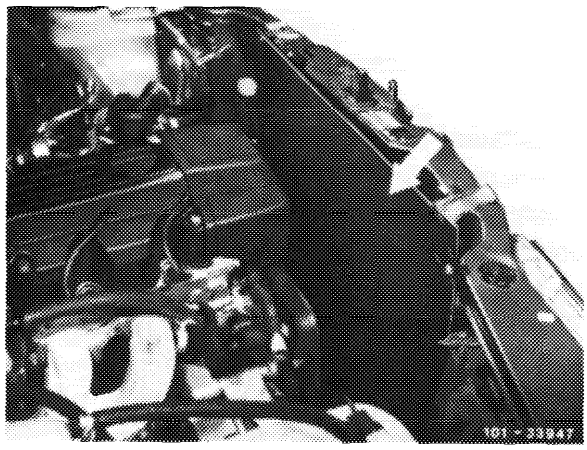


Reinstallation note:

Clean the air filter.

5 Remove radiator (20-420).

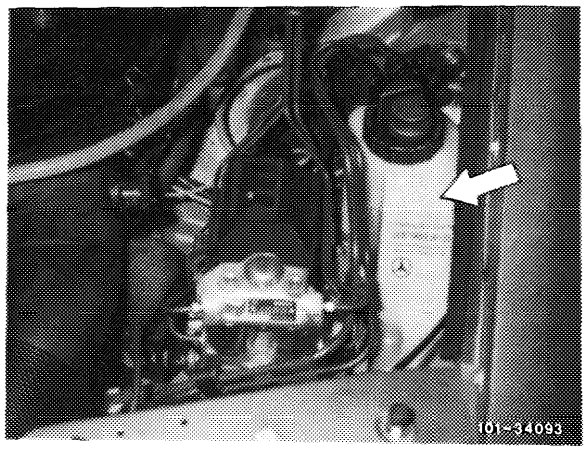
6 With air conditioning: Attach guard plate (arrow) to a/c condenser



7 With air conditioning: Remove poly-V-belt (13-342).

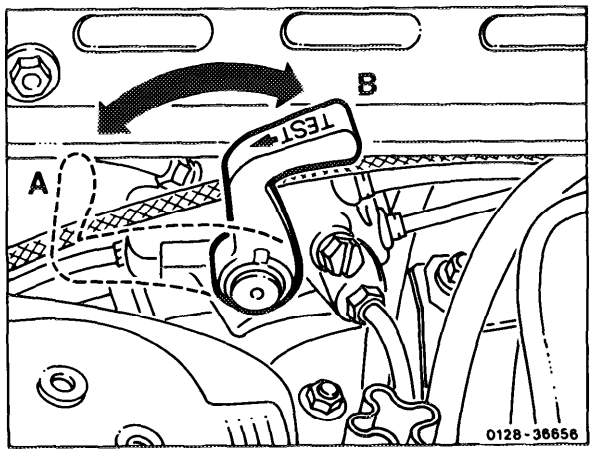
8 Remove viscous fan clutch (20-312).

9 4MATIC: Unclip oil hose at bottom of hydraulic oil reservoir (arrow) and detach at tandem pump.

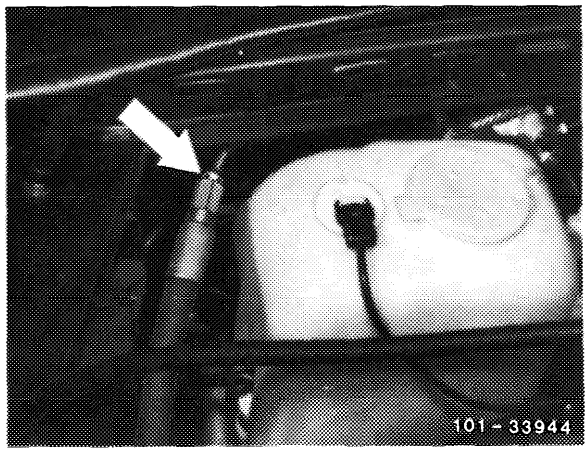


10 4MATIC: Release hydraulic system pressure by moving lever to test position on service valve.

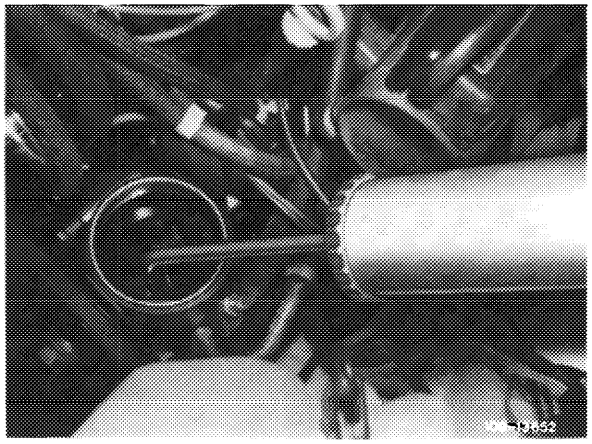
A Test position
B Operate position



11 Detach threaded connector (arrow) at high-pressure expansion hose.

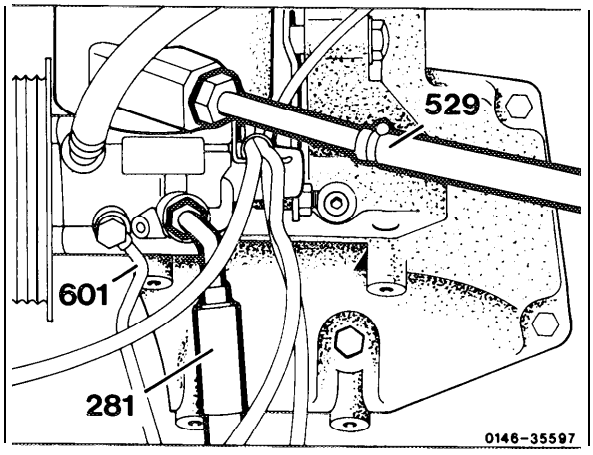


12 Draw oil from the reservoir of the tandem pump with a suction pump.



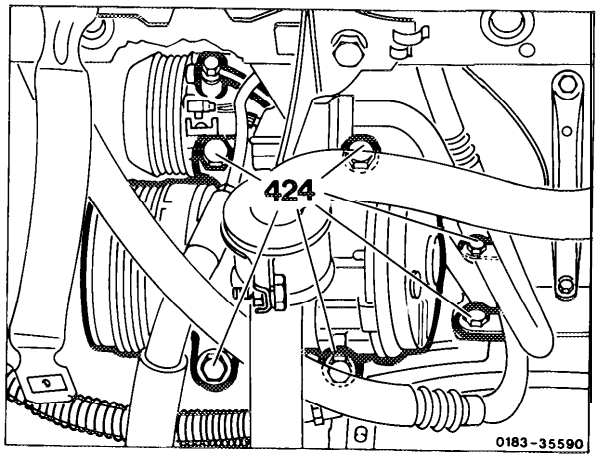
Installation note:
Check power steering oil level. Fill power steering system with the specified oil. With the engine running, top oil up to the mark. Turn steering several times from full lock to full lock. When the oil is at normal operating temperature, level is approx. 20 mm below the edge of reservoir, if the oil is cold it should be 6 – 8 mm below the mark (46-710).

13 Disconnect oil lines (281, 529) to steering gear and oil line (601) for self-levelling suspension at the tandem pump.

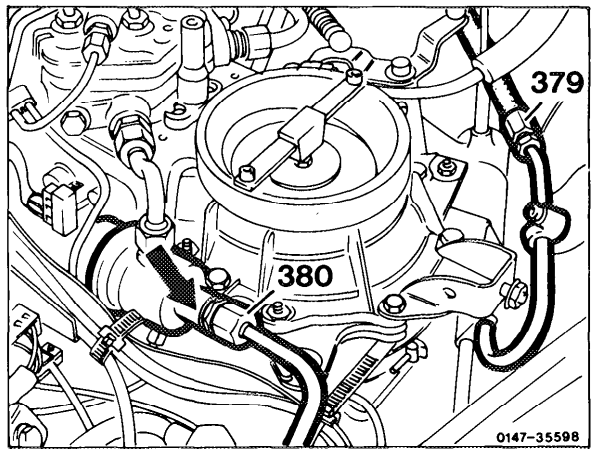


Installation note:
Replace seals.
High-pressure expansion hose (281) tightening torque 30 Nm.
Return line (529) tightening torque 40 Nm.

14 Detach air conditioning compressor from engine.
Remove bolts **(424),** tightening torque 25 Nm.
Secure air conditioning compressor with manifold connected at the bottom of the engine compartment to the side.

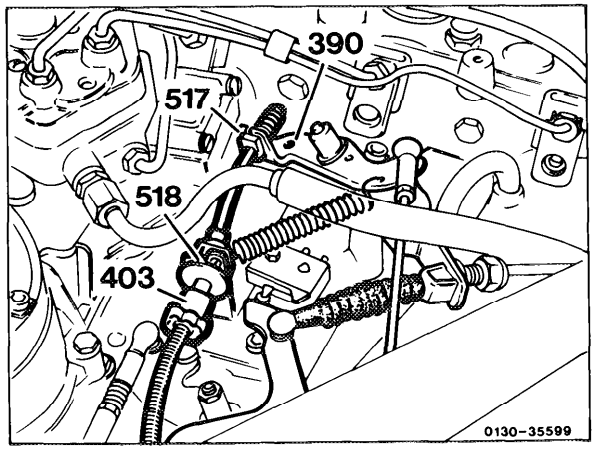


15 Briefly open the fuel filler cap to vent the fuel tank pressure.
Disconnect the fuel lines (380, 379).
Keep the connector fitting from turning (arrow) when detaching the fuel line (380).

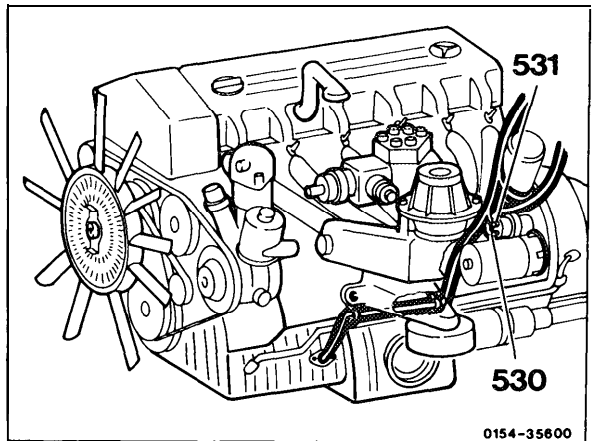


16 Detach the accelerator Bowden cable. Press plastic guide (517) out of its seat in the fulcrum lever (390) and withdraw Bowden cable (403) through the slot in the fulcrum lever.
Squeeze links of the plastic clip (518) together and push clip with the Bowden cable (403) through the bracket rearward.

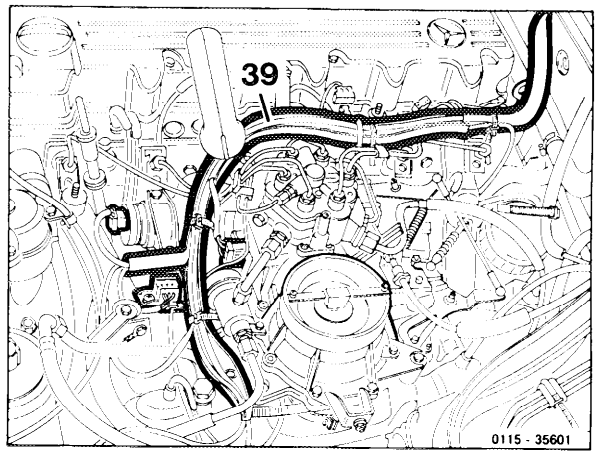
Installation note:
Readjust Bowden cable (30-325).



17 Disconnect electric wires. Turn nut (531) downward. Unscrew cross-head screw (530).
Detach cable from the oil level gauge and from the oil pressure sensor.

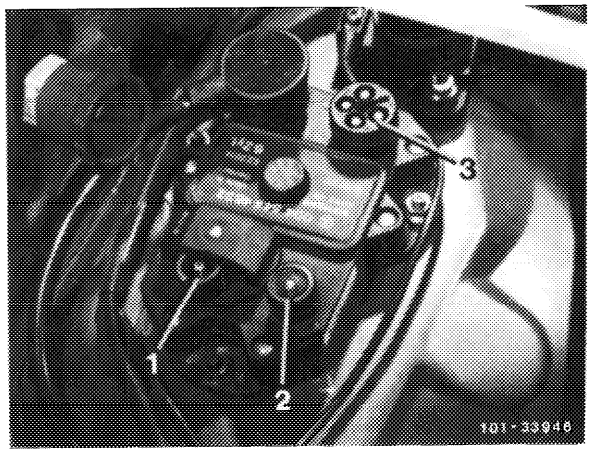


18 Release all cable straps of the engine wiring harness. Disconnect all the plug connectors along the engine wiring harness.
Remove engine wiring harness (39).



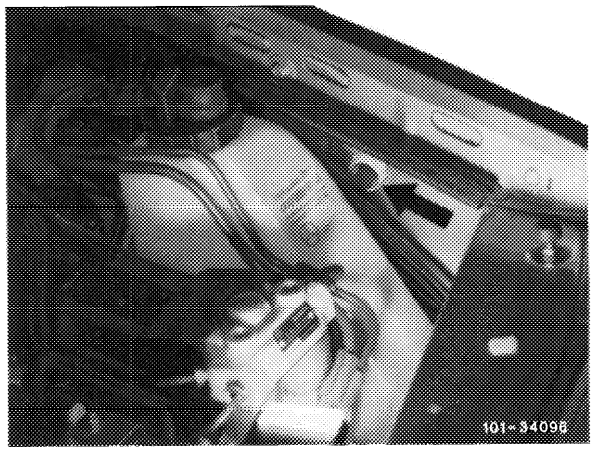
19 Detach heating hoses and vacuum lines in engine compartment.

20 Detach green control line from position sensor and vacuum line at ignition control unit connector - sensor.

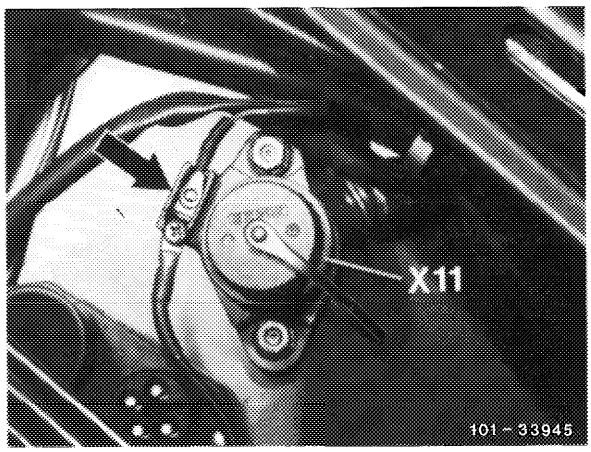


1 Vacuum connection
2 Control line connection
3 Connector - sensor connection

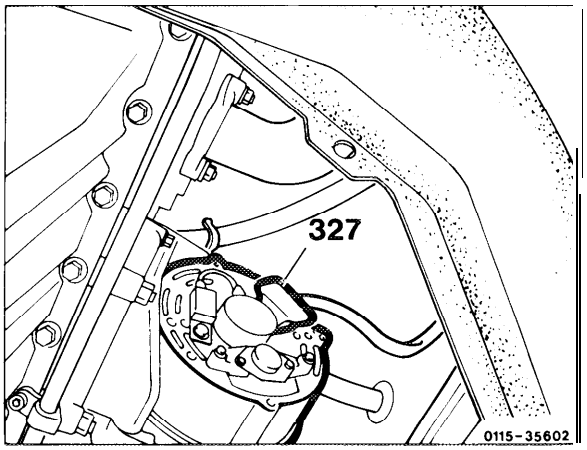
21 Detach vapor absorbtion line (arrow) of fuel evaporation control system from connector fitting on left wheelhouse.



22 Detach terminal block terminal TD (arrow) next to diagnostic socket (XI 1), unbolt diagnostic socket, detach grey cable from TDC sensor on back side of diagnostic socket.



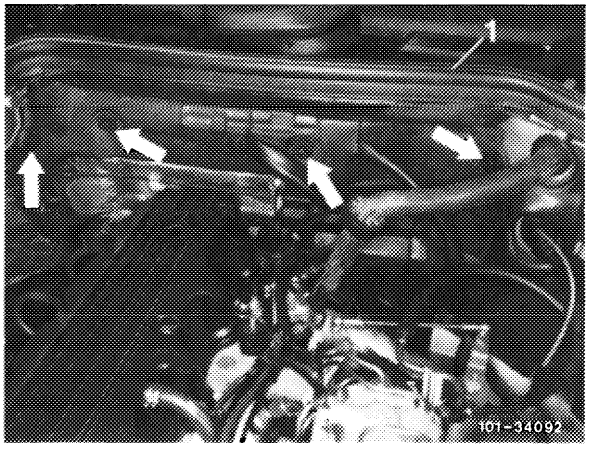
23 Detach wiring connector (327) at alternator.



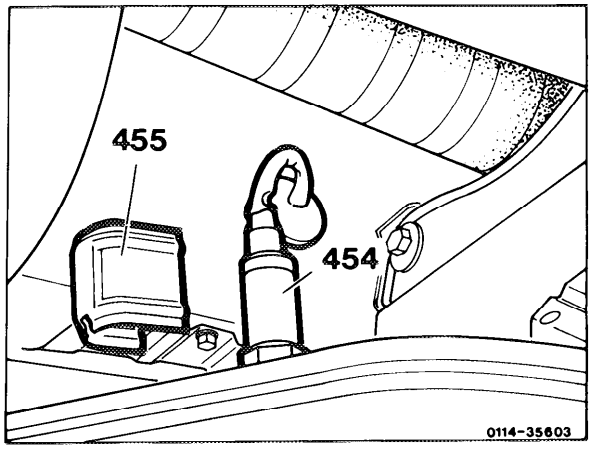
24 Remove rubber sealing strip (1) from component compartment wall.

25 Remove wiring harness cover by removing four plastic screws (arrows).

26 On vehicles with self-leveling suspension, unbolt wiring bracket at front of engine.

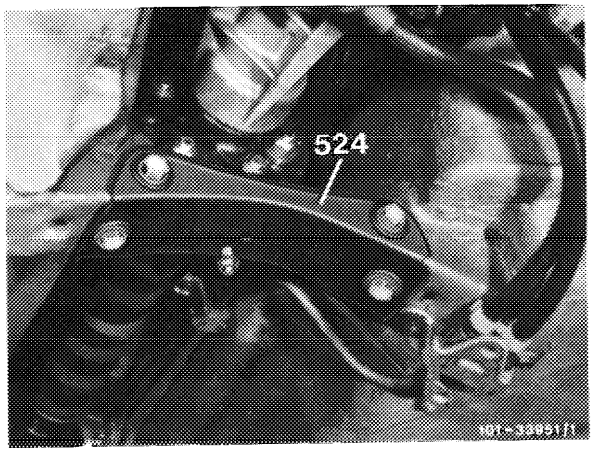


27 Remove protective cover (455), unscrew oxygen sensor (454).

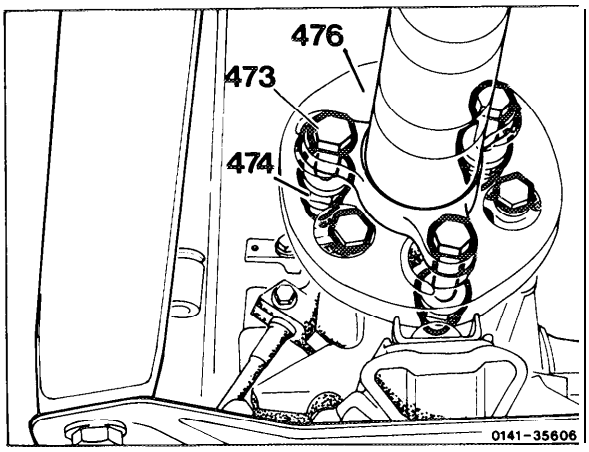


28 4MATIC: Remove heat shields at transfer case and center tunnel.

29 Unbolt crossmember (524) in center tunnel, tightening torque 25 Nm.

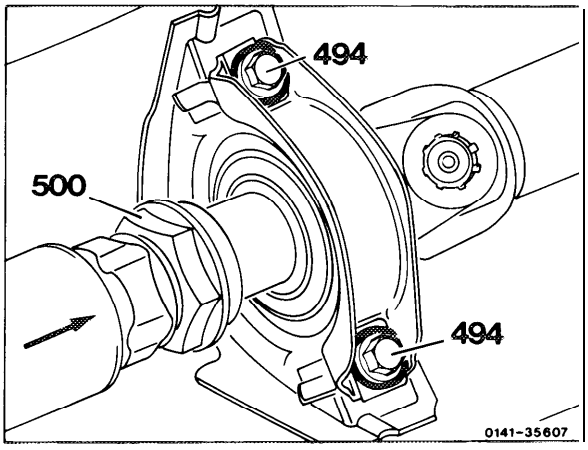


30 Remove driveshaft.
Unscrew nut (474), withdraw bolt (473), tightening torque 45 Nm. Flexible joint (476) remains on transmission.

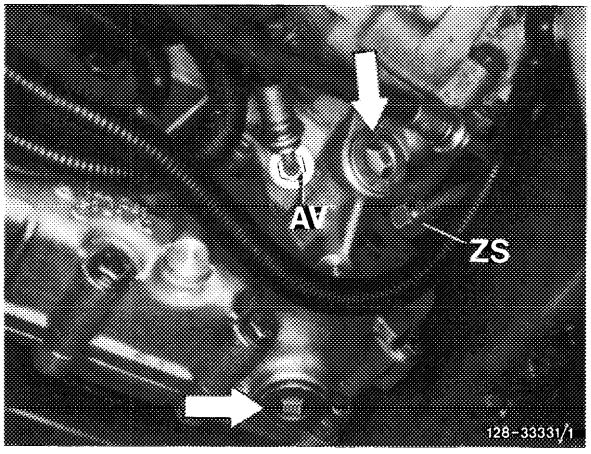


31 Loosen bolt (494) for propeller shaft intermediate bearing, but do not remove. Tightening torque 25 Nm.

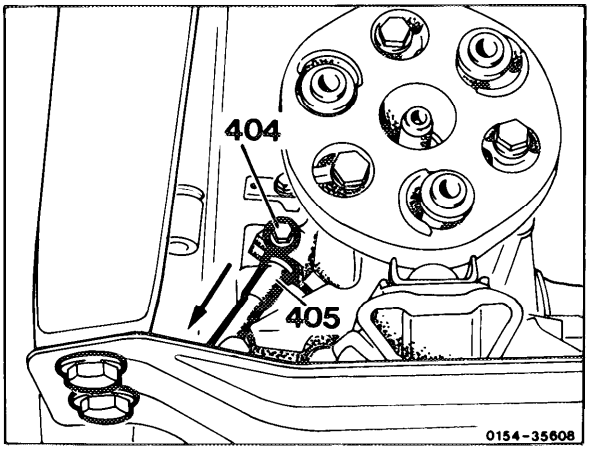
32 Loosen clamping nut (500) (wrench size 41/46 mm) on the driveshaft. Push driveshaft back as far as possible in direction of arrow, tightening torque 35 Nm.



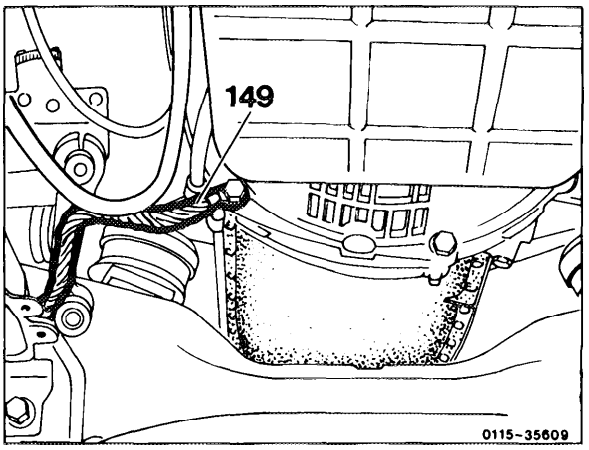
33 4MATIC: Unscrew hydraulic lines (AV, ZS) at transfer case.



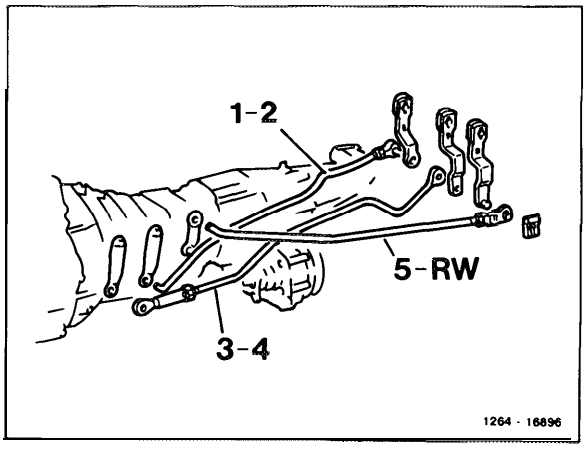
34 Unscrew bolt (404). Withdraw speedometer cable (405) in direction of arrow.



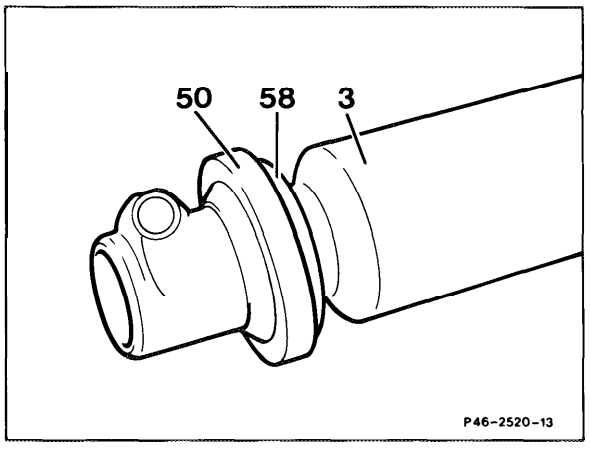
35 Unscrew ground cable (149) at transmission.



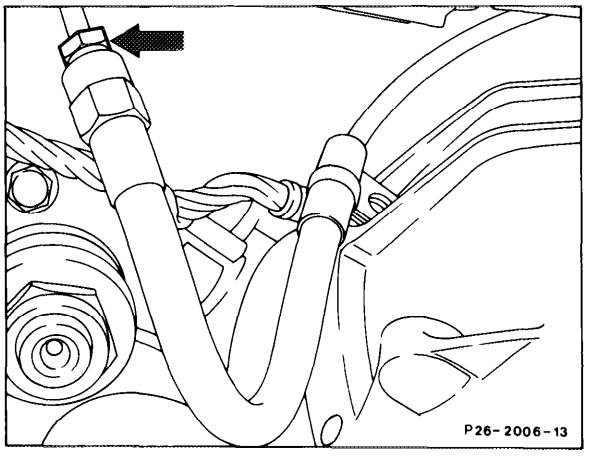
36 With manual transmission: Press the clip locks off first and then detach shift rods from the transmission shift levers.



37 With automatic transmission: Detach shift rod at center console. Turn white plastic lock on starter lockout, backup light switch (53) approx. 45° to the right and detach cable connector. Detach cable at kickdown solenoid valve.



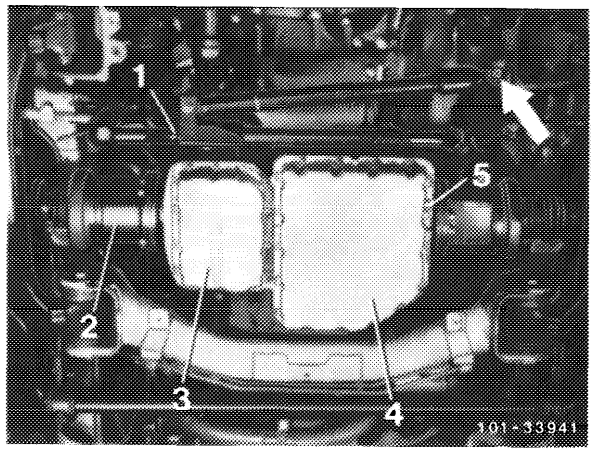
38 With manual transmission: Disconnect hydraulic line (arrow) to slave cylinder at hose union.
Seal lines with plugs or draw fluid from the rear chamber of the combined reservoir with a suction gun.



39 4MATIC: Remove center link together with steering damper (1). Unbolt steering damper (arrow) at the body.
Remove center link using the tapered stud remover, 201 589 08 33 00.

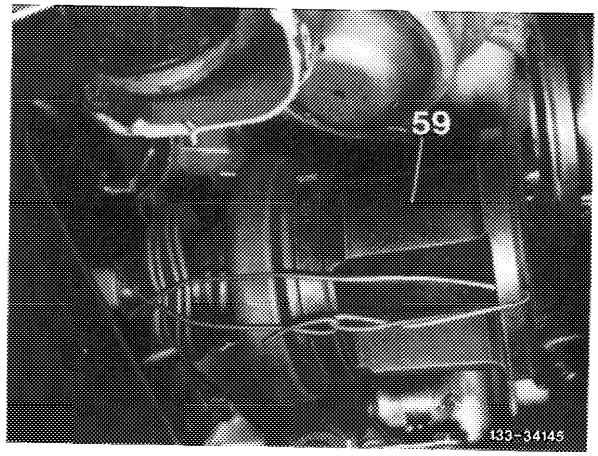
Note:
Replace self-locking nuts.
Tightening torques:

Steering damper	50 Nm
Center link	5 Nm

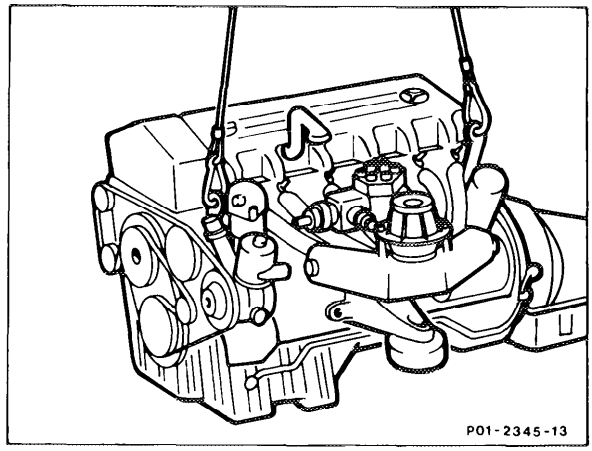


40 4MATIC: Remove front axle shafts (59).
Operate foot brake to slacken the six bolts (microencapsulated).
Compress front axle shafts as much as possible and hold in this position with wire.
Lay front axle shaft on crossmember, tightening torque 70 Nm.

Note
Do not pull inner joint too far apart and wire together to prevent the needle-bearing tripod joint rollers from dropping out of the journals at the tripod cross.

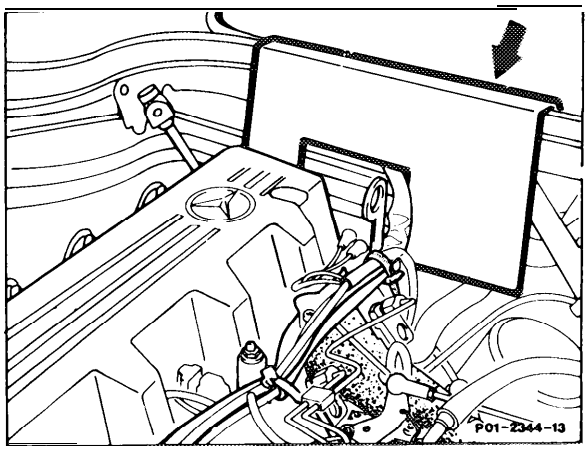


41 Attach engine hoist to the suspension lugs of the engine.
Adjust engine hoist so that the engine can be lifted horizontally.



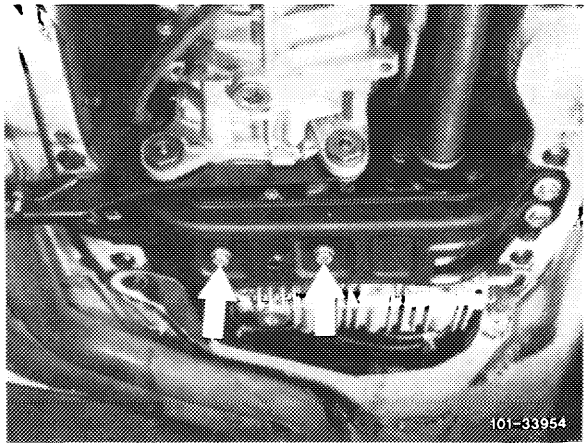
42 Insert guard plate (arrow) between the component compartment wall and the engine.

43 Support transmission with car jack or inspection pit lift.



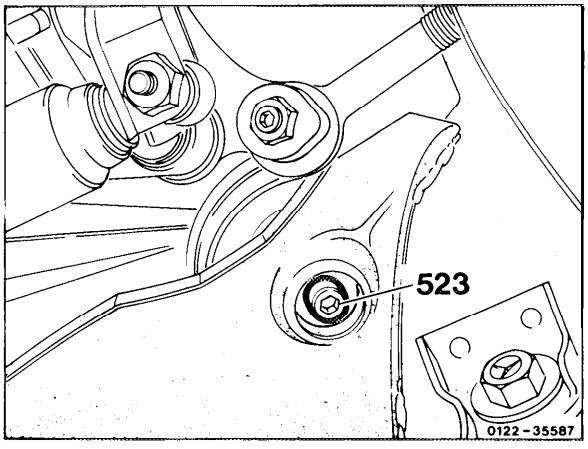
44 4MATIC: Unscrew bolts (arrows), tightening torque M8 20 Nm.

45 Remove rear engine support, tightening torque Ml0 35 Nm.



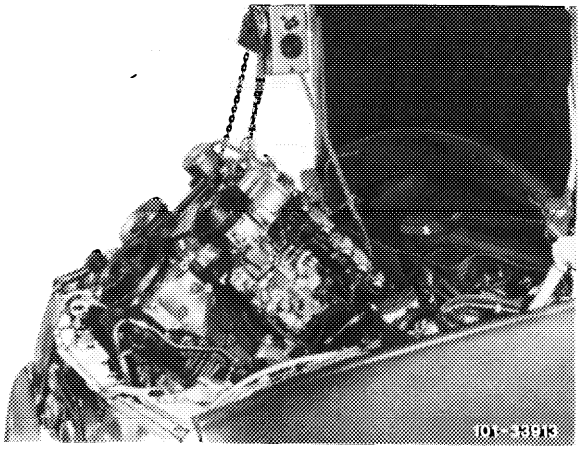
46 Unscrew bolt (523) on left and right front engine mount from below, tightening torque 40 Nm.

4MATIC: 2 bolts from below, tightening torque 20 Nm.



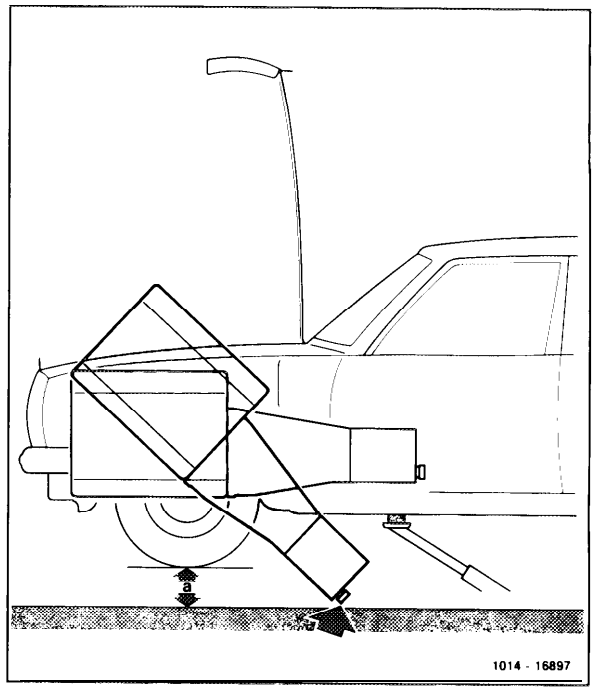
47 Angle engine and transmission and lift out of engine compartment, or install as appropriate, by readjusting engine hoist several times.

Note:
When tilting engine at the rear suspension lug, pay attention to oil filter.



4MATIC: Do not place any load and do not strike lube oil line on transfer case (arrow) otherwise leaks may occur.

a = approx. 30 cm
t-look height at least approx. 260 cm.



48 Reverse sequence for reinstallation.

49 Check engine mounts at front and rear.

50 Check coolant, oil and fuel hoses.

51 With automatic transmission, adjust cable for control pressure (27-l 00).

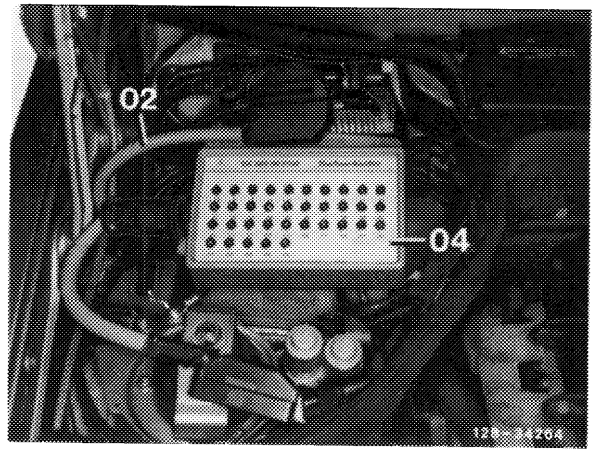
52 Check idle speed, adjust if necessary (07.3-l 00).

53 Check tightening torque of oil drain plugs.

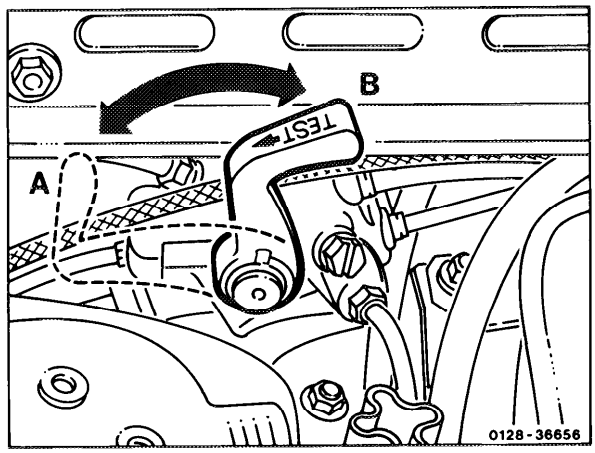
54 Correct oil level in engine and transmission.

55 Top up coolant, check anti-corrosion/ antifreeze agent, correct freeze point (20-010).

56 4MATIC: Bleed hydraulic system. Connect socket box. Disconnect 4MATIC control unit and connect 25-pin connector to the socket box (04) with the Y cable (02). The control unit remains disconnected.

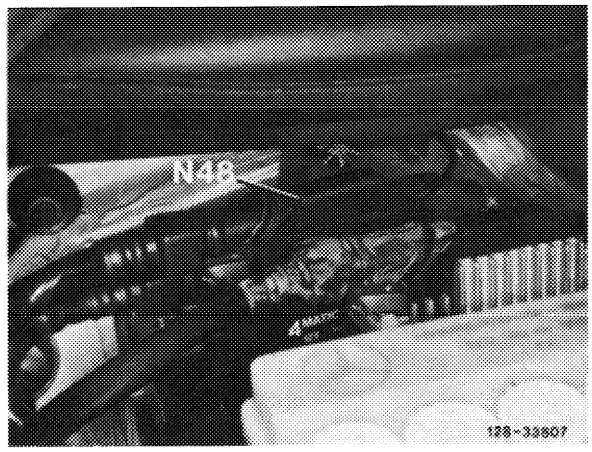


57 4MATIC: Bleed hydraulic oil pump. Check hydraulic oil level in reservoir. Put service valve in test position. Start engine for bleeding and run for approx. 30 seconds at 1000 - 2000 rpm. After bleeding, move service valve back to operating position.

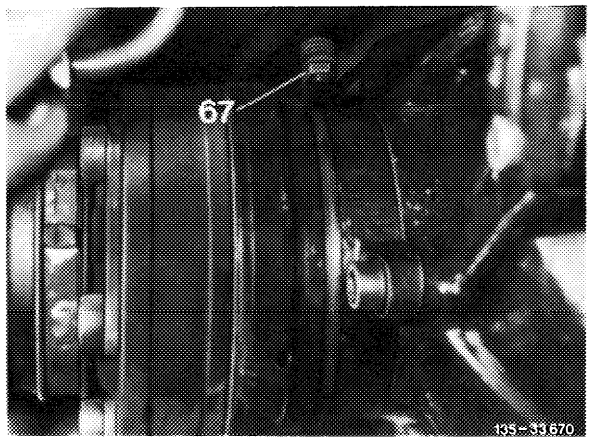


A Test position
B Operating position

58 4MATIC: Detach 25-pin connector from control unit (N 48) and connect socket box. Service valve in operating position. Apply parking brake. Start engine and run at idle speed.



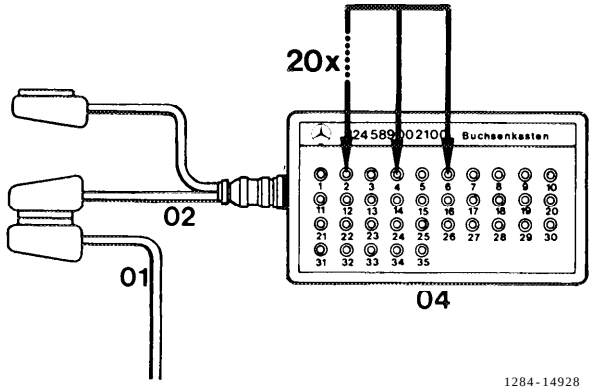
59 4MATIC: Bleed rear axle differential lock. Activate HS solenoid valve by jumpering contact 8 and contact 2 (ground) on socket box. Open bleeder (67) on rear axle center piece until the hydraulic oil flows out without bubbles (attach hose).



60 4MATIC: Bleed front and center differential multi-disk clutches. Activate front and center differential solenoid valves together 20 times by connecting contacts 4 and 6 on the socket box and jumpering to contact 2 (ground) 20 times.

Note

By actuating the front and center differential multi-disk clutches several times, the trapped air is removed with the hydraulic oil.

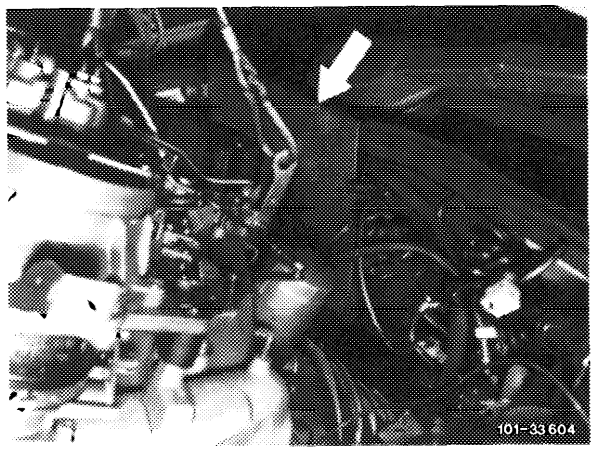


1284-14928

B. Model 201

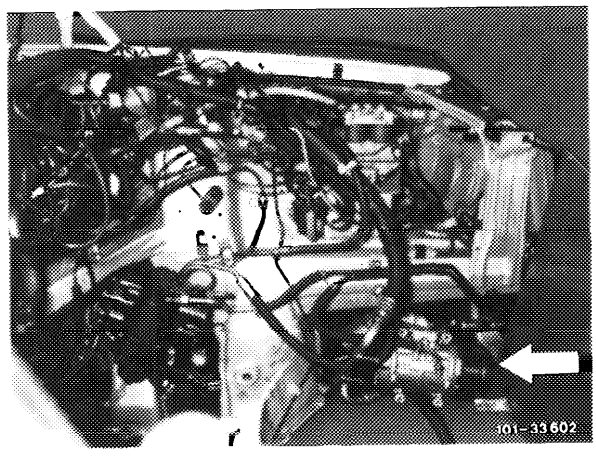
Removal, installation

1 Position suitable panel (arrow) between firewall and engine to prevent damage to to firewall.



2 Remove fan with visco clutch and radiator.

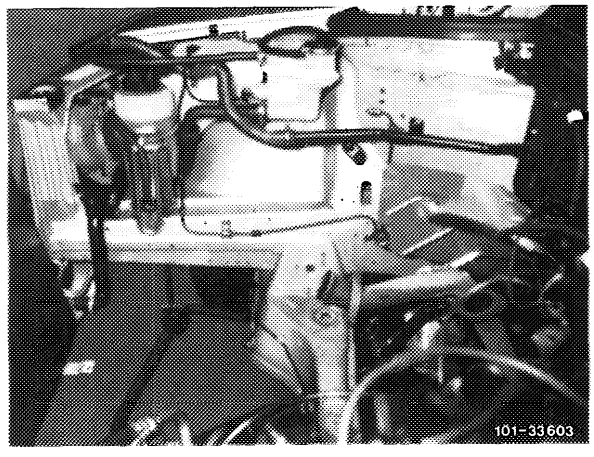
3 Protect condenser with suitable panel. Unbolt holder for refrigerant lines (2 bolts) and compressor (4 bolts). The compressor (arrow) remains in the vehicle with the refrigerant lines connected.



4 Disconnect steering linkage at left.

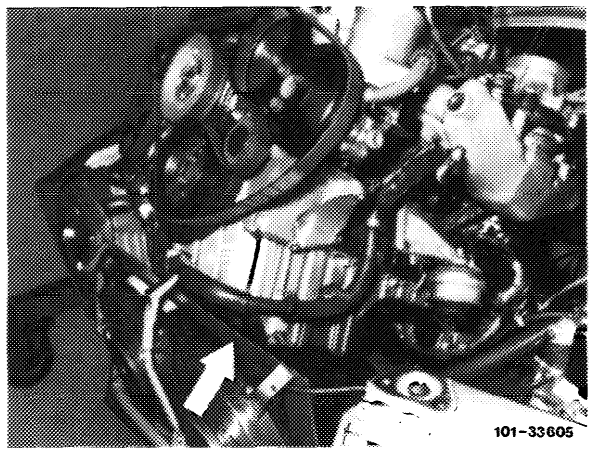
5 Engine mounts remain on engine.

6 Use new self-locking nut on steering linkage.



7 Lift engine out while altering angle of engine on hoist as necessary.

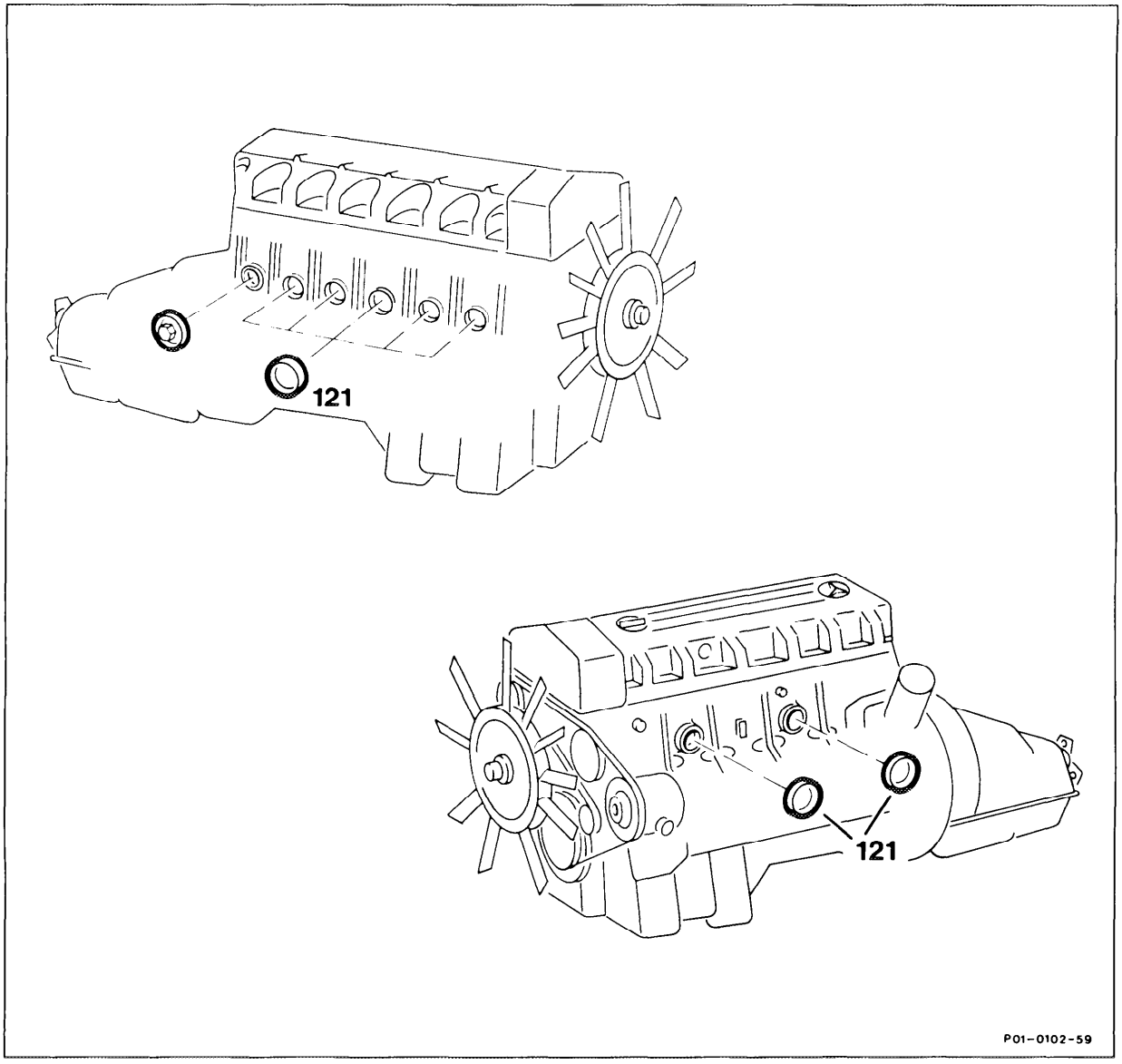
Install in the reverse order.



01-140 Replacing freeze plug in engine block

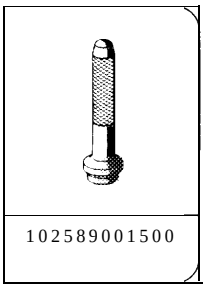
Preceding work:
Freeze plug to be replaced exposed.

Job No. of job texts and job values or standard texts and flat rates ..... 01-8501 -01-8741



Coolant	drain, pour in (20-010).
Freeze plug (121)	remove (steps 3 and 4).
Freeze plug hole	clean.
Freeze plug hole	coat with sealant 002 989 09 71.
Freeze plug (121)	drive in with drift. Special tool 102 589 00 15 00
Sealant	allow to cure.
Engine	check for leaks.

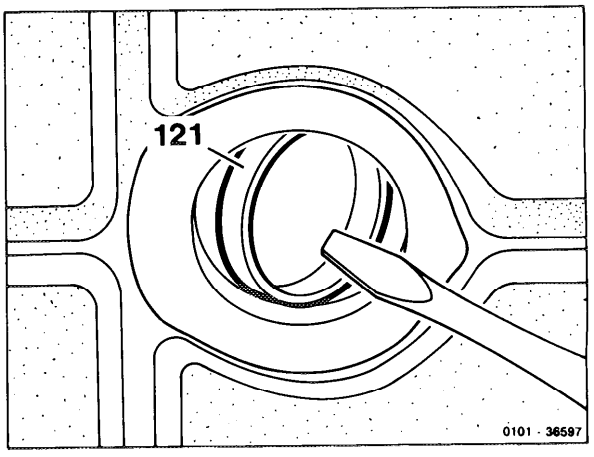
Special tool



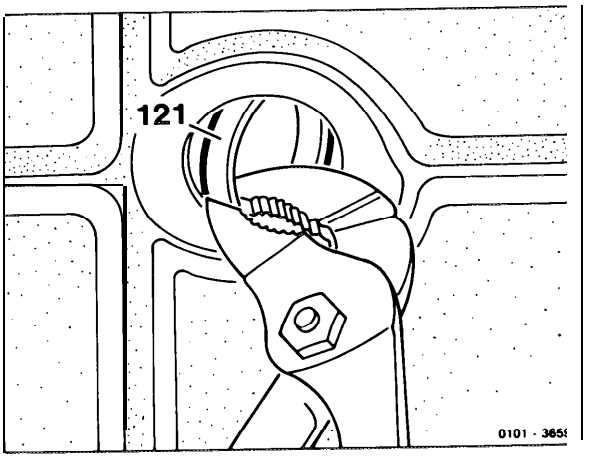
Replacement

1 Drain coolant (20-010).

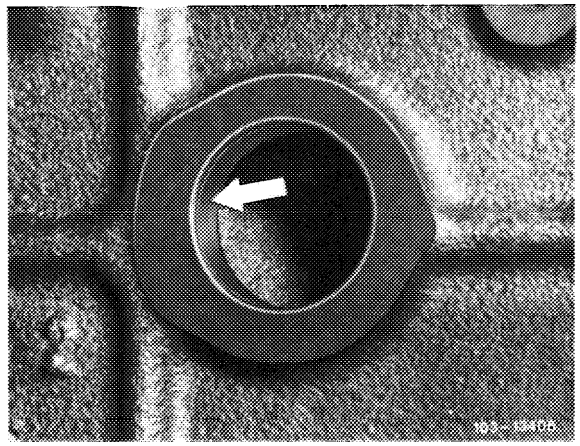
2 Use a screwdriver to tap in freeze plug (121) on one side far enough to turn it.



3 Pull freeze plug (121) out with pliers.

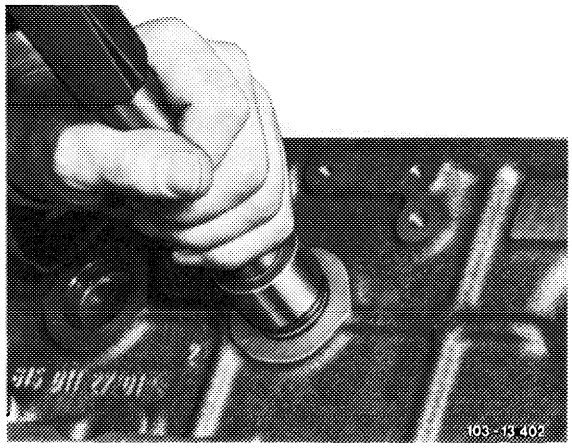


4 Thoroughly clean freeze plug hole. Spray the bore (arrow) with activator. It must be free of grease.



5 Coat freeze plug hole with sealant 002 989 09 71.

6 Drive in new freeze plug with drift 102 589 00 15 00 until flush.



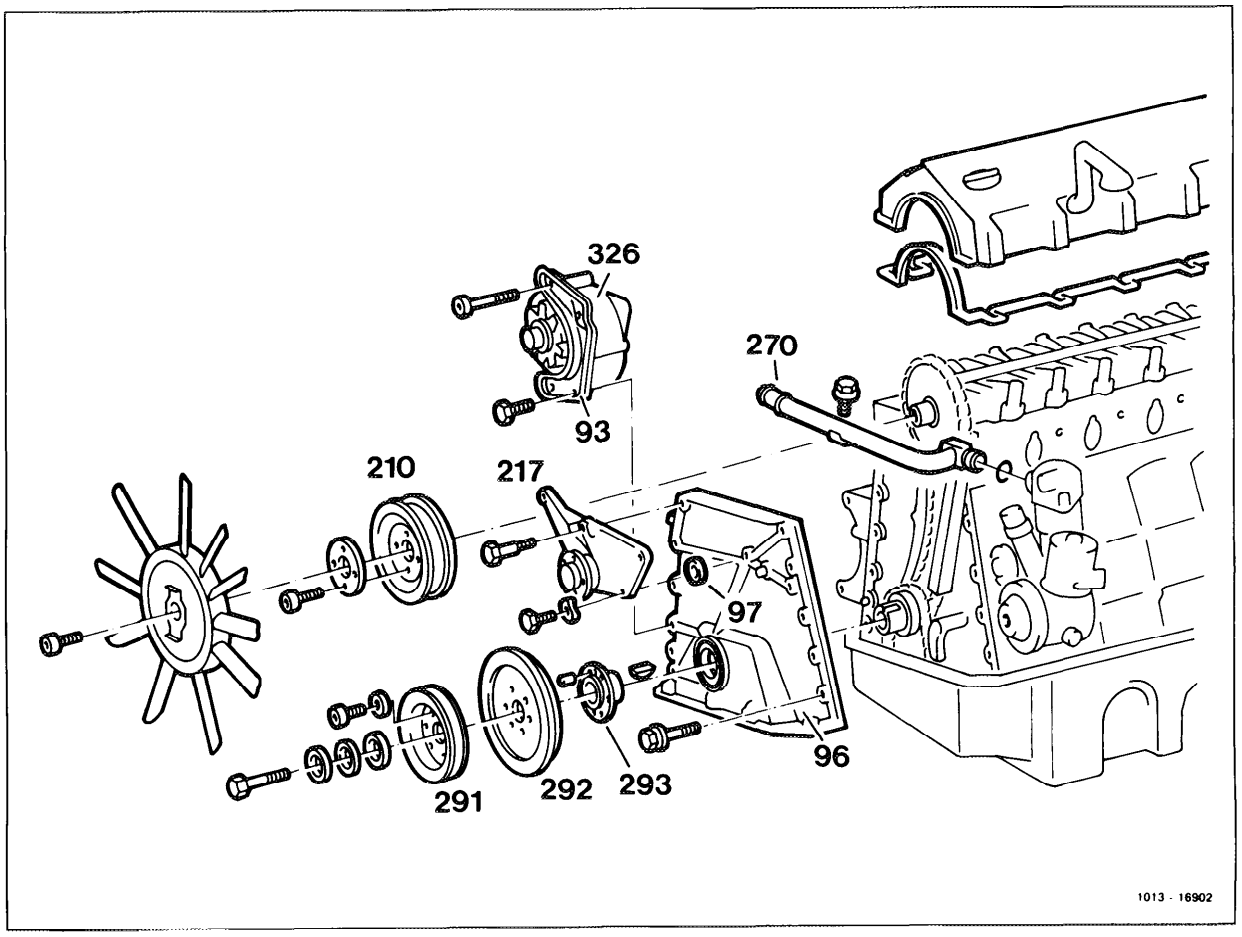
Note:
The sealant must harden for approx. 45 minutes before the coolant is poured in.

7 Run engine until it is warm and check for leaks.

01-210 Removing, installing timing cover

Job No. of job texts and job values or standard texts and flat rates . . . . . 01-8000 – 01-8009

Model 124



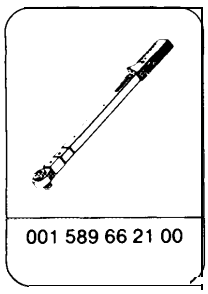
Hood	set vertical (01-008).
Ground cable at battery	disconnect, reattach.
Air filter and air scoop	remove, install (09-400).
Engine compartment lower cover	remove, install (step 5).
Radiator	remove, install (20-420).
Viscous fan clutch	remove, install (20-312).
Fastening bolts of belt pulleys: Fan clutch, coolant pump, tandem pump	loosen, tighten, 10 Nm.
Poly V-belt	remove, install (13-342).
Belt pulley: fan clutch (210), coolant pump, tandem pump	take off, reinstall (step 10).

Belt pulley (291), vibration damper (292) and hub (293)	remove, install (03-342).
Heating water return line (270)	detach, attach and place to one side (step 12).
Level control line	detach, attach and place to the side (step 13).
Front top cover	remove, install (01-212).
Tensioner bracket	loosen, swivel, seal and secure (step 15).
Tandem pump	unbolt, bolt on(step 16).
Fan bearing support(217)	remove, install, 21 Nm (step 17).
Sealing ring (97)	replace (step 24).
Alternator (326) with bracket (93) and TDC sensor	remove, install (steps 18 and 19).
Chain tensioner	remove, install (05310).
Timing cover (96) front lower	unbolt, replace M6 10 Nm, M8 21 Nm (step 22).
Timing cover (96) with TDC sensor bracket	remove, seal and replace.

Tightening torques

Fastening bolts of oil pan		10 Nm
Timing case cover to crankcase	M6	9 Nm
	M8	21 Nm
Belt pulley to coolant pump shaft		10 Nm
Belt pulley to tandem pump		10 Nm

Special tool



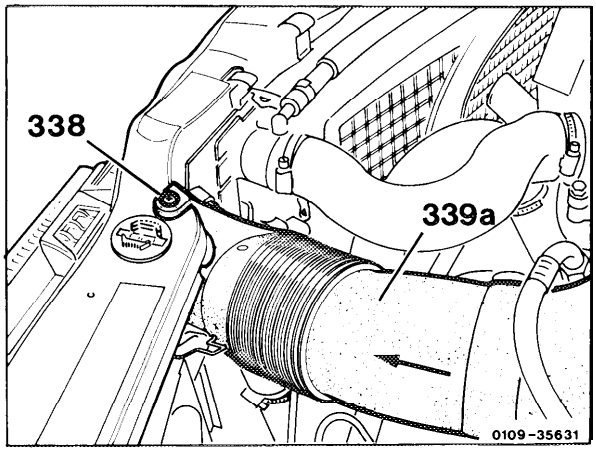
Removal, installation

1 Set hood vertical (01-008).

2 Disconnect battery ground cable.

3 Unscrew bolt (338). Pull air scoop (339a) from air filter in direction of arrow and remove.

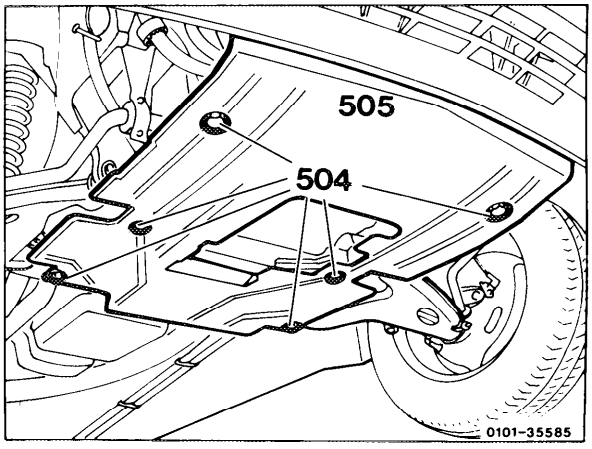
4 Remove, install air filter (09-400).



5 Unscrew bolts (504) and take off engine compartment covering (505).

6 Remove radiator (20-420).

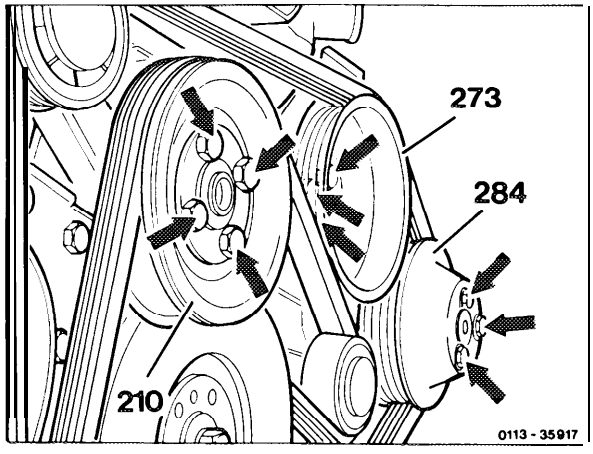
7 Remove viscous fan clutch (20-312).



8 Loosen bolts (arrows).

9 Remove poly V-belt (13-342).

10 Unscrew bolts (arrows), tightening torque 10 Nm.
Take off belt pulleys from fan clutch (210), coolant pump (273) and tandem pump (284).

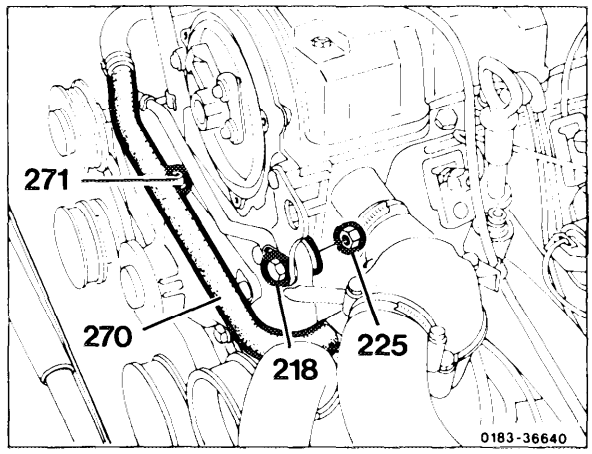


11 Remove belt pulley, vibration damper and hub (03-342).

12 Loosen bolt (271). Withdraw heating water return line (270) from coolant pump and place to one side. Unscrew nut (225) and withdraw bolt (218) from the front.

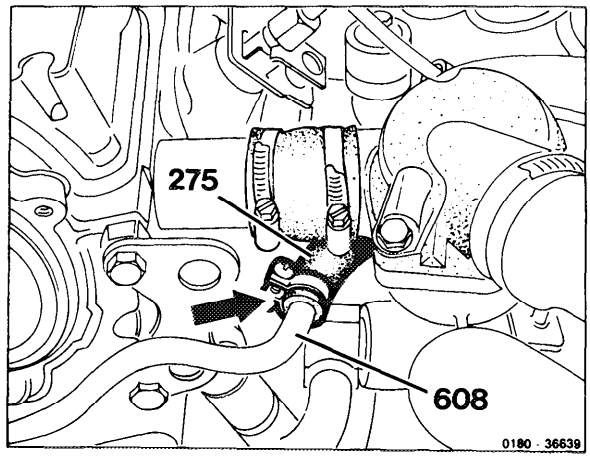
Note:
Effective 10/1987, the heating water return line is also bolted to the coolant pump.

Installation note:
Replace heating water return line seal (270).



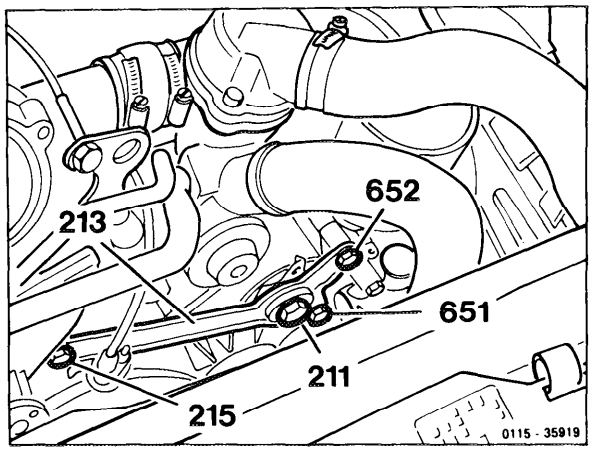
13 With self-levelling suspension, loosen clip (arrow). Detach hose (275) and plug line (608).

14 Remove front upper cover (01-212).

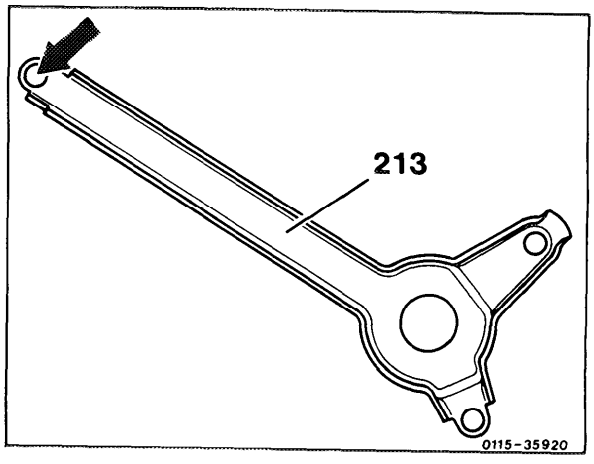


15 Loosen bolt (211) and remove bolts (215, 651, 652) together with spring washers. Swivel bracket (213).

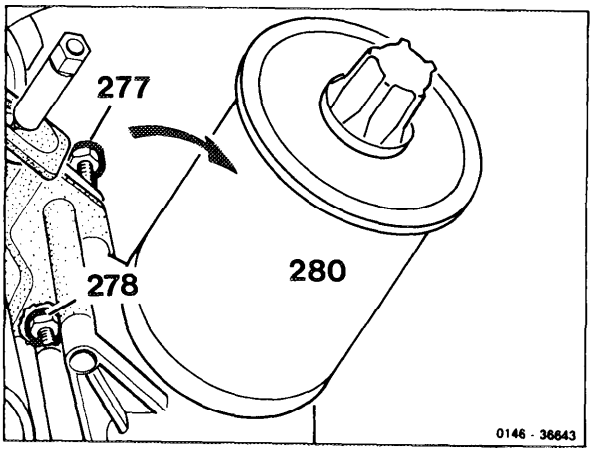
Note:
Hold nut of bolt (651) to prevent it turning.



Installation note:
Apply sealant 001 989 29 20 to the front and rear sides of the attachment hole (arrow) of the bracket (213).

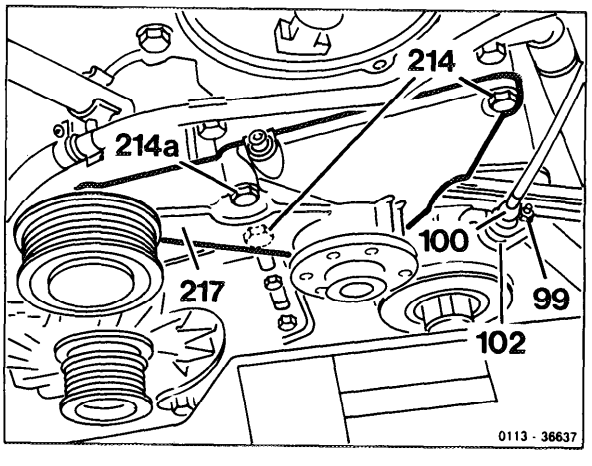


16 Unscrew bolts (277, 278). Swivel tandem pump (280) in direction of arrow.



17 Unscrew bolts (214), tightening torque 21 Nm, and remove fan bearing support (217). Unscrew nut (99). Take off TDC sensor (100) together with cable and place to one side.

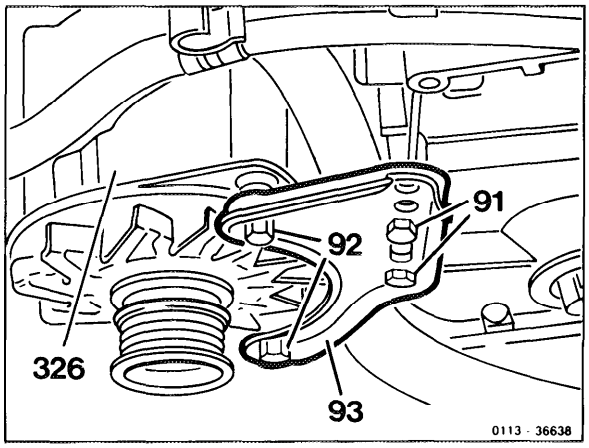
Note
TDC sensor bracket (102) remains on timing case cover.
If replacing timing case cover, adjust TDC sensor.



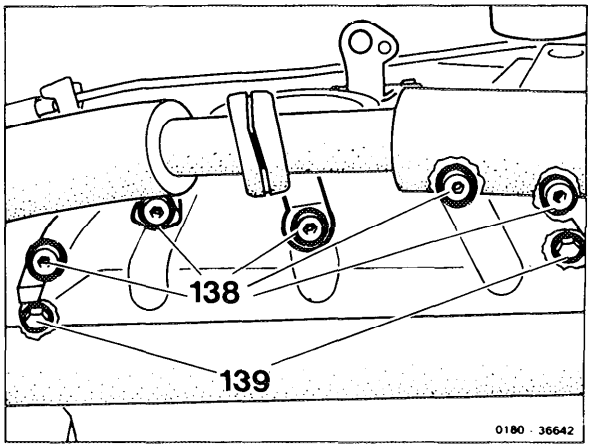
18 Disconnect wiring connector at the alternator (326).

19 Unscrew bolts (91, **92).** Remove bracket (93) and alternator (326).

20 Remove chain tensioner (05310).

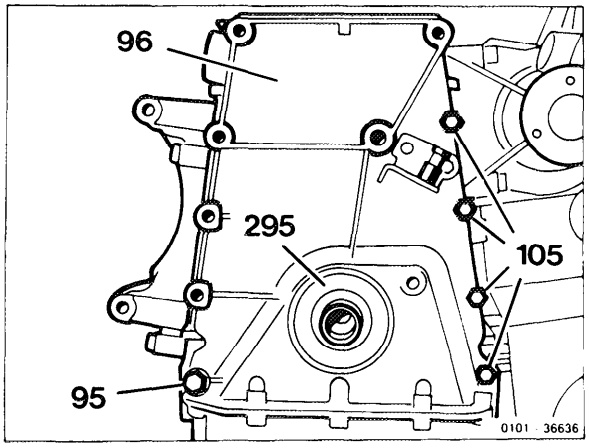


21 Unscrew bolts (138), tightening torque 10 Nm, and bolts (139), tightening torque 21 Nm, on the oil pan.
With self-levelling suspension: Place retaining clip with high-pressure hose to the side.



22 Unscrew bolts (95, 105) and remove timing case cover (96).

Note:
Do not damage oil pan gasket!
If necessary, replace oil pan gasket.
Check crankshaft front seal (295); renew if necessary.



23 Clean sealing surfaces on crankcase and on timing case cover.
Apply an even coat of sealant 001 989 45 20 to sealing surface of timing case cover.

4MATIC: Also, clean sealing surfaces of oil pan and coat with sealant 001 989 61 20 10.

Note

The timing case cover is held in place by two roll pins in the engine block. Do not damage oil pan gasket.

Tightening torque 10 Nm.

Timing case cover to engine block:

M6 : 9 Nm

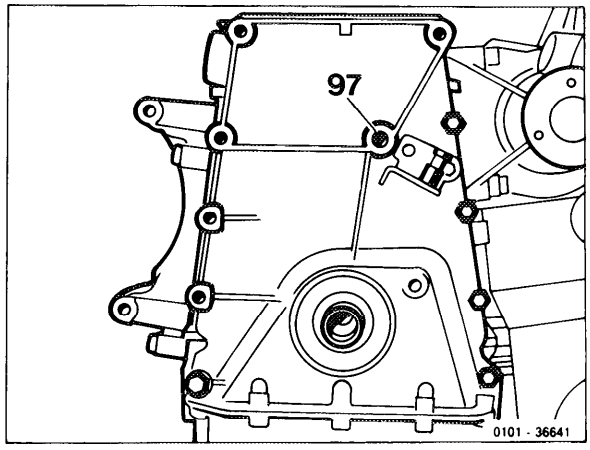
M8 : 21 Nm

24 Replace seal (97).

25 Install in reverse sequence.

26 Check engine oil level in and top up if needed.

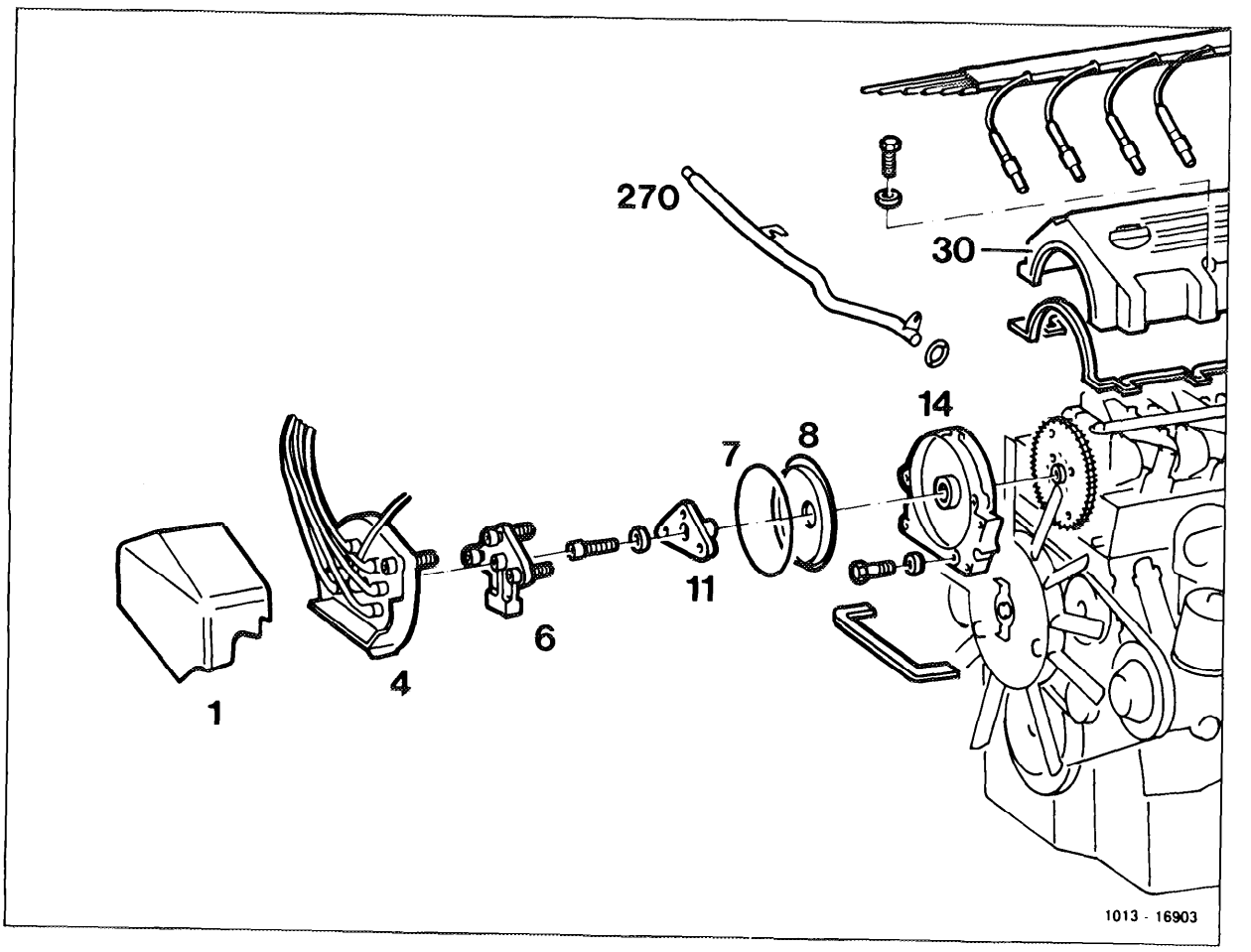
27 Check engine for leaks with engine running.



01-212 Removing, installing top front cover

Job No. of job texts and job values or standard texts and flat rates . 01-5700

Model 124
Model 129



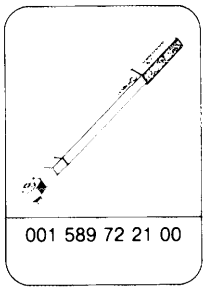
Hood	set vertical (01-008).
High-voltage distributor (4) with protective cover (1)	remove, install (steps 2 and 3).
Cap of expansion tank	open, release pressure, close.
Heating water return line (270)	remove, install (step 5).
Missing coolant	top up.

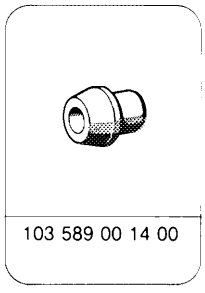
Valve cover (30) with ignition cables and high-voltage distributor (4)	remove, install (Caution: Observe steps 6 and 7).
Distributor rotor (6) and driver (11)	remove, Install (steps 8 and 9).
Guard cover (8) and seal (7)	take off, fit on (step 10).
Front cover at top (14)	remove, seal and install (steps 11 to 13).

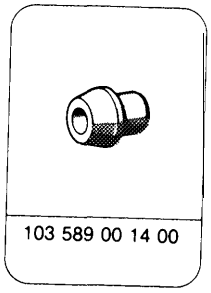
Tightening torques

Valve cover to cylinder head	8.5 Nm
Distributor rotor to driver (reference value)	2.5 Nm
Front cover at top to cylinder head	21 Nm
Distributor driver (1 st version, aluminum, diameter 21.5 mm) to camshaft M8	21 Nm
Distributor driver (2nd version, steel, diameter 20 mm) to camshaft M7	16 Nm

Special tools


001 589 72 21 00

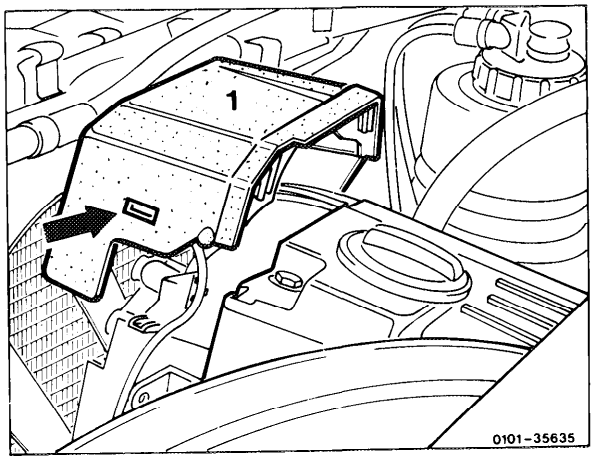

103 589 00 14 00


103 589 00 14 00

Removal, installation

1 Set hood vertical (01-008).

2 Remove protective cover (1) from high-voltage distributor. Unclip catches (arrow) and pull protective cover (1) upwards out of the guides.

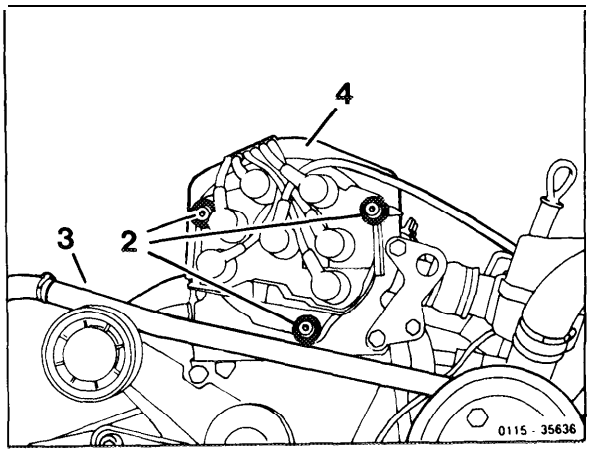


3 Remove distributor cap screws (2), take off distributor cap (4) and unplug spark plug cables.

4 Open expansion tank cap to release cooling system pressure.

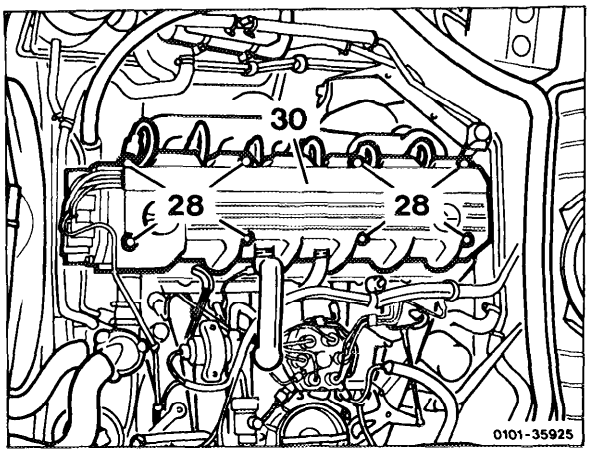
5 Remove heating water return line (3).

Installation note:
Replace seal.

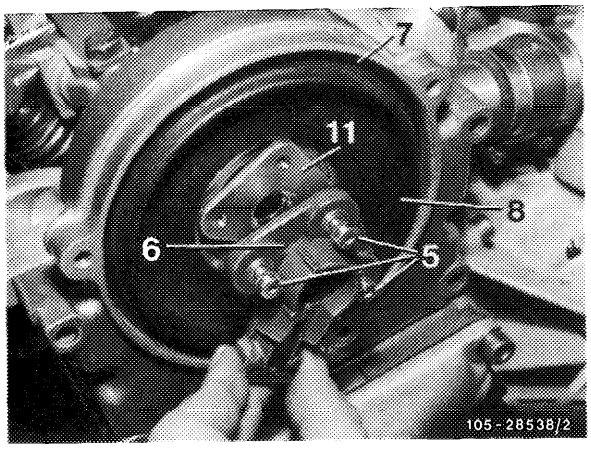


6 Unscrew bolts (28), tightening torque 8.5 Nm.
Take off valve cover (30) with ignition cables and distributor cap.

Caution!
If valve cover is difficult to remove, do not strike cover with a hammer (risk of cracking and fracturing).

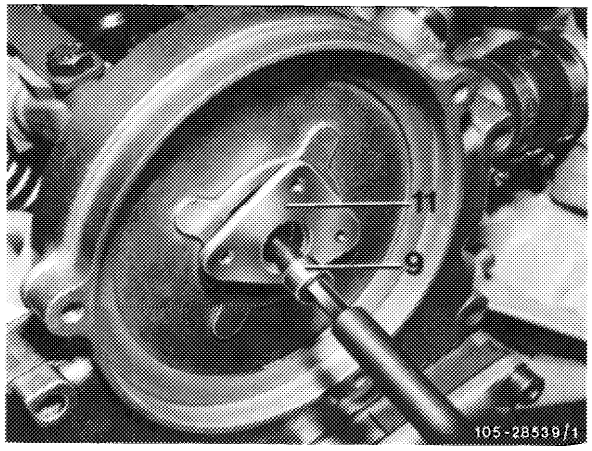


7 Unscrew bolts (5), tightening torque 2.5 Nm. Remove distributor rotor (6).



8 Unscrew bolt (9), tightening torque 21 Nm. Pull driver (11) out by hand.

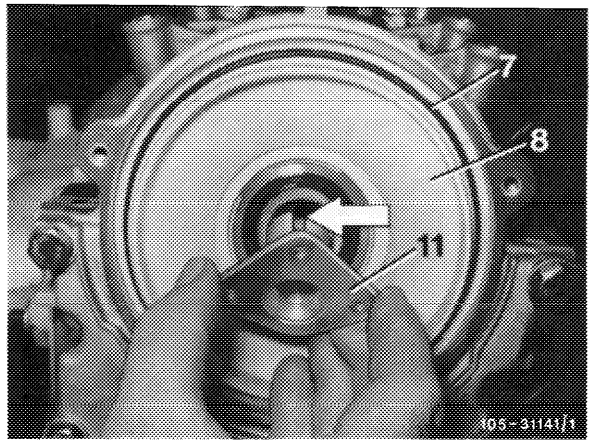
9 Take off guard cover with seal.



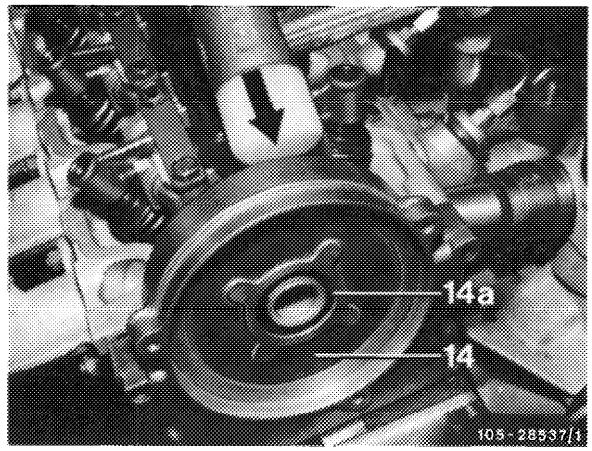
Installation note:
Steel driver with 20 mm diameter flange must be fitted with M7 x 26 mm bolt, and aluminium driver with 21.5 mm diameter flange with M8 x 29 mm bolt.

Installation note:
The groove (arrow) in the driver (11) must engage the pin in the camshaft.

Driver	1 st version	2nd version
Material	Aluminum	Steel
Bolt	M8 × 29	M7 × 26
Torque	21 Nm	16 Nm
Insertion sleeve collar diameter	103 589 00 14 00 21.5 mm	103 589 01 14 00 20 mm



10 Unscrew front cover bolts (14), tightening torque 21 Nm.
Tap off front cover (14) with a plastic hammer.
The front cover (14) is centered with two dowels.

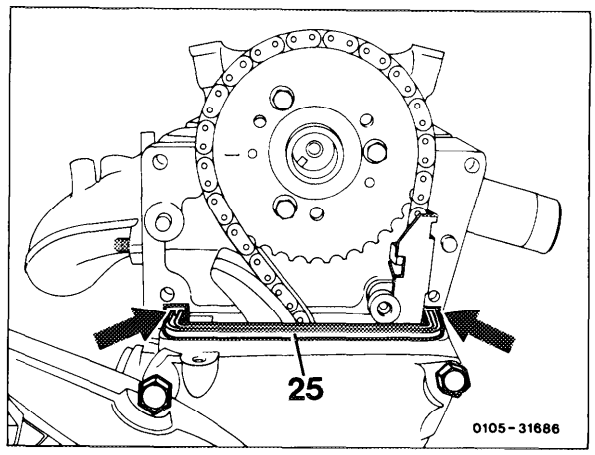


Note
If the camshaft seal (14a) in the front cover (14) is replaced, it must be pressed in from the front until flush.

11 As a seal, apply sealant 001 989 61 20 10 at the points marked (arrows) on the left and right sides of the oil-free groove of the timing case cover (at joint to cylinder head).

Insert new seal (15) dry (without sealant) into the groove and push rearward.

12 Coat contact surfaces of front cover to cylinder head with sealant 002 989 00 20 10.

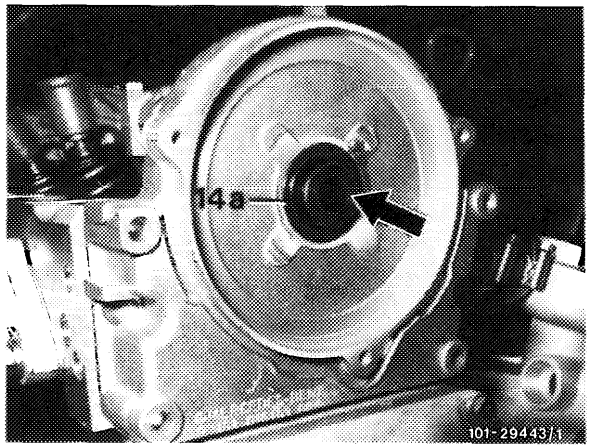


13 Insert guide sleeve (arrow) 103 589 00 14 00 (for camshaft diameter 21.6 mm), or 103 589 01 14 (diameter 20 mm) onto camshaft. Coat sealing lip of radial seal (14a) with engine oil. Install front cover (14).

14 Tighten the two bottom bolts first, tightening torque 21 Nm.

15 Install in reverse sequence.

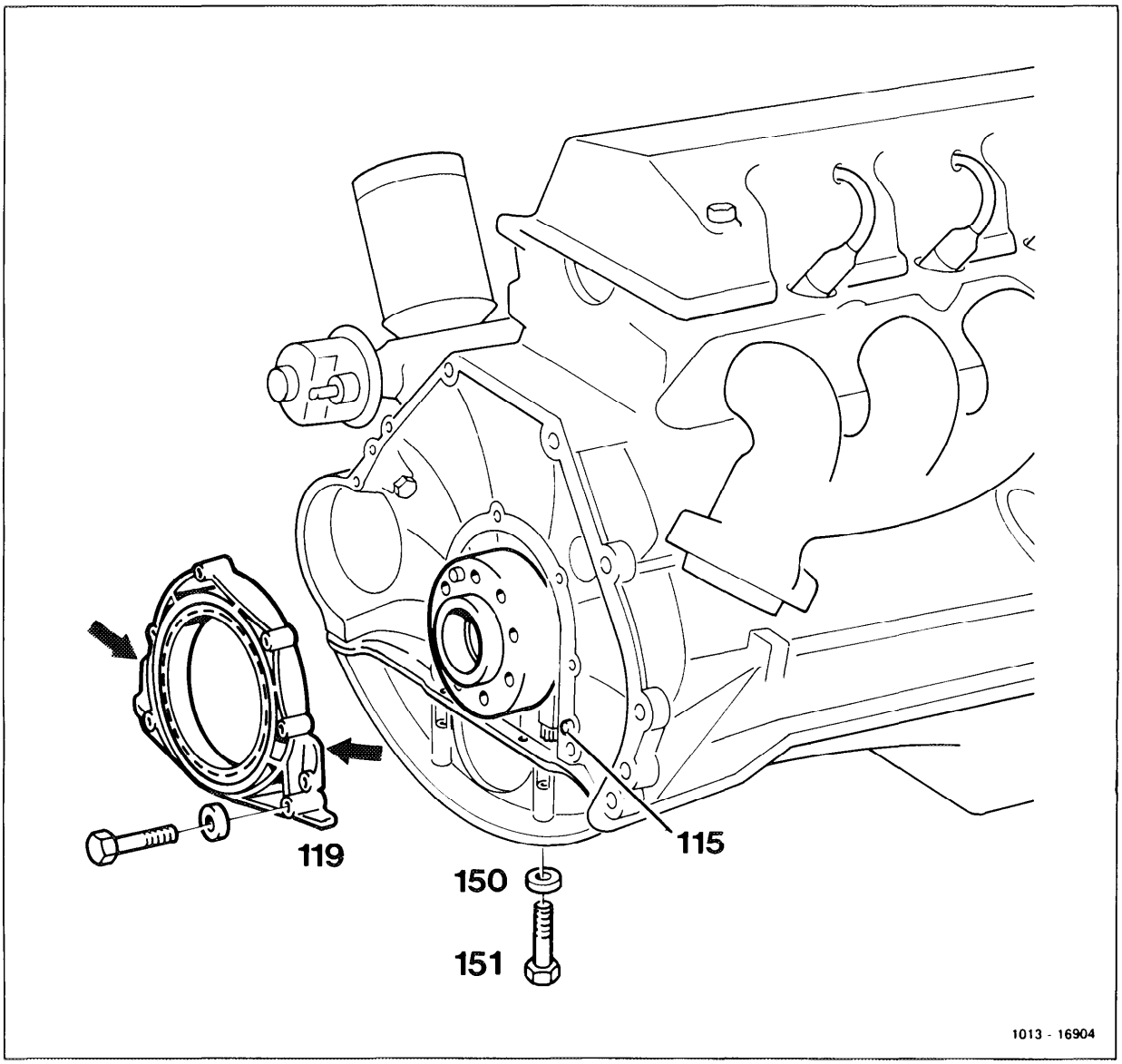
16 Top up coolant.



01-222 Removing, installing rear main seal cover

Transmission removed.

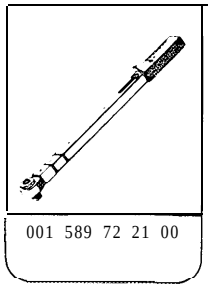
Job No. of job texts and job values or standard texts and flat rates 01-8913



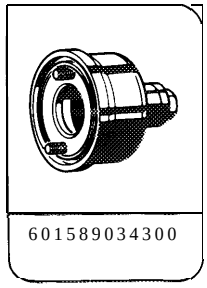
Ground cable	detach, attach at battery.
Flywheel or flex plate	remove, install (03-410).
Bolts (151)	remove, install, 10 Nm. When installing, tighten these bolts first.
Washers (150)	note location

Rear main seal cover (119)	remove, install. Pry off at bosses (arrows) (steps 2 to 7). Sealant 001 989 45 20 10. Installation tool 601 589 03 43 00. Preserve oil pan gasket. On 4MATIC engines sealant on oil sump.
Sealing surfaces	clean.
Dowels (115)	note location.
Rear main crankshaft seal	check, replace if necessary. Coat sealing lip with engine oil.
Oil level in engine	check, top up.
Engine in installation position	support, secure.
Leaks once engine is running	check for.
Flywheel or driven plate	install.

Special tools



001 589 72 21 00



601589034300

Note

The rear main seal cover is sealed to the engine block with sealant and centered with 2 dowels. In addition, it is bolted to the oil pan and sealed on the bottom by the oil pan gasket, or on 4MATIC engines with sealant.

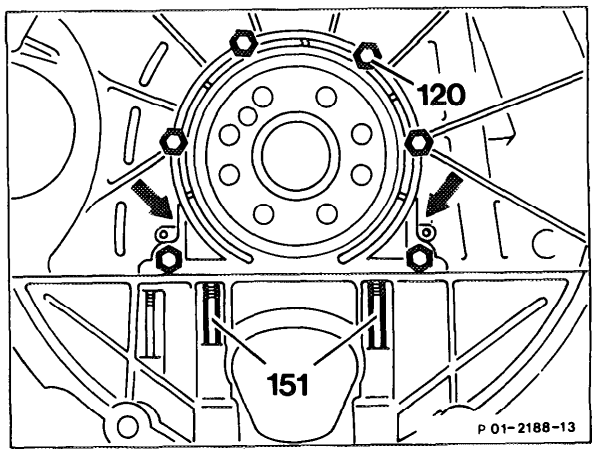
There must not be any scoring or unevennesses in the sealing surface of the rear main seal cover or of the engine block.

Removal, installation

1 Disconnect ground cable at battery.

2 Remove flywheel or flex plate (03-410).

3 Remove bolts (120, 151) and pry off closing cover at the two bosses (arrows) and remove.



⚠
Do not damage oil pan gasket. If necessary, replace oil pan gasket.

4 Clean sealing surface on crankcase, on closing cover and, on 4MATIC engines, also on oil sump.

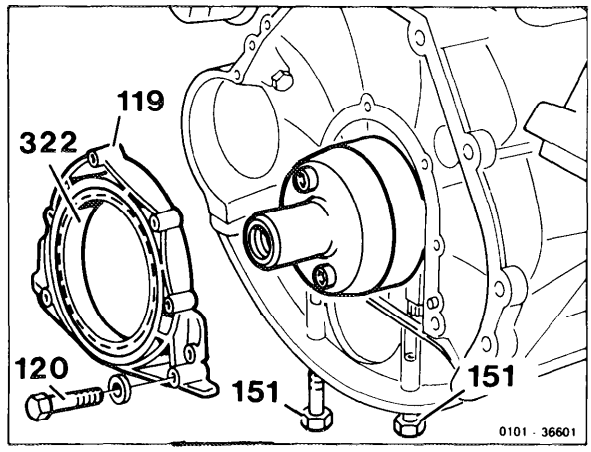
5 Check radial seal, renew if necessary (03-327).

6 Apply an even coating of sealant 001 989 45 20 10 to the sealing surface of the closing cover and, on 4MATIC engines, also to the sealing surface of the oil sump.

7 Coat sealing lip of radial seal with engine oil.

⚠
Do not use grease. Grease prevents the inclined webs on the sealing lip transporting back the engine oil.

8 Press on closing cover (119) with radial seal (322) over the bolted-on insertion tool inner section 601 589 03 43 00 and over oil sump gasket and bolt on.



⚠
Do not damage oil sump gasket.

First of all tighten bolts (151) to 10 Nm, then tighten bolts (120) to 9 Nm.

9 Check oil level in engine and adjust to correct level.

⚠
Before starting engine, move into installation position and secure at the rear by supporting.

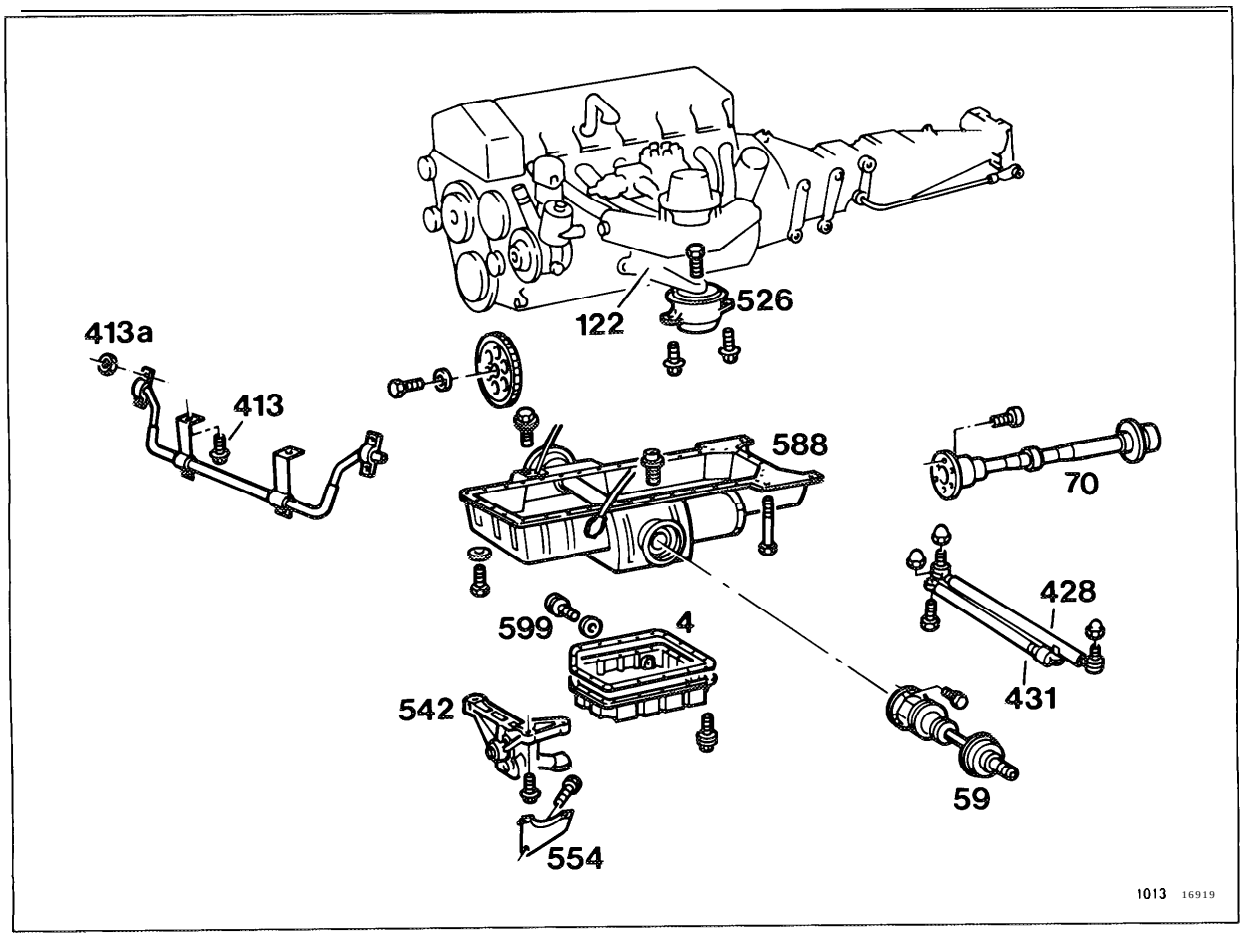
10 Attach ground cable.

11 Check for signs of leaks with engine running, prior to installing transmission.
12 Install in the reverse order.

01-310 Removing, installing Oil Sump or Front Axle Housing (4MATIC)

Job No. of job texts and job values or standard texts and flat rates 01-7500

A. Model 124 and 124 4MATIC



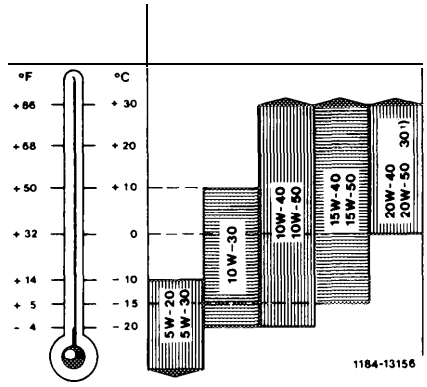
The Illustration shows Model 124 4MATIC

Hood	raise to vertical position (01-008).
Ground cable to battery	detach, attach.
Air filter (4MATIC)	remove, install (09-400).
Engine compartment covering below	remove, install (step 4).
Engine oil	drain, fill in, oil drain plug (599) 25 Nm.

Both engine mounts (526) front	unscrew, screw on from below. Model 124 4MATIC M8 (527) 20 Nm Model 124 M10 40 Nm
Bolts (413) and nuts (413a) on both sides	unscrew, screw in, 60 Nm (step 7).
Fan cowl	detach, attach.
Dipstick guide tube (4MATIC)	remove, install, 10 Nm (step 9).
Drag link (428) with steering damper (431)	remove, install, tapered removal tool 201 589 08 33 00, (step 10). Drag link 35 Nm Steering damper 50 Nm
Self-locking bolts and nuts	renew.
Exhaust system	unscrew at flange of exhaust manifold (step 11).
Front propeller shaft (70, 4MATIC)	unscrew, screw on, 25 Nm (step 12).
Front axle shafts (59, 4MATIC)	unscrew, screw on, 70 Nm (step 13).
Plug connection, oil level switch	on oil sump or front axle housing, detach.
Bottom section of oil sump (4, 4MATIC)	remove, install, 10 Nm (step 15).
Support (554) for oil pump (542, 4MATIC)	remove, install (step 16).
Guard plate on component compartment wall	insert, remove (step 17).
Oil sump	on crankcase, unscrew, screw on, (step 18) M6 10 Nm, M8 22 Nm.
Packing	renew.
Sealant (4MATIC)	apply.
Engine	raise, lower (steps 19 and 20).
Piston of 3rd and 4th cylinder	set to TDC (step 21).
Lefthand engine support (122) at crankcase (4MATIC)	remove, install, M8 20 Nm (step 22).
Front axle housing (588, 4MATIC)	unscrew, screw on, (step 23) M6 10 Nm, M8 22 Nm.
Oil pump (542, 4MATIC)	remove, install, 25 Nm (step 24).
Oil sump or front axle housing (588)	remove, install.

Specified viscosity classes according to SAE at prolonged outside temperatures

[1]) At prolonged outside temperature above + 30 °C SAE 40 may be used.
Precise use of the SAE classes according to the outside air temperatures would necessitate frequently changing engine oil. The temperature limits for the SAE classes should therefore be regarded as a guide which may be transgressed for brief periods.
In moderate climatic zones SAE 30 may be used from April onward for all engine versions.
The following oils may be used as an all-season oil for all gasoline engines
SAE 10 W–40 and SAE 10 W-50 below + 10 °C.
SAE 5 W-20
SAE 5 W-30, 10 W-30 all-year-round in moderate climatic zones, i.e. up to + 30 °C
SAE 15 W-30 all-year-round in moderate climatic zones



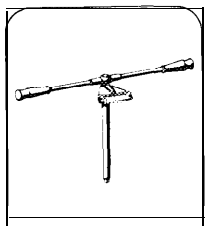
Oil capacities in liters (refer to Service Product Specifications for approved engine oils)

	124 4MATIC	124
Oil sump	6.25	5.7
Hypoid transmission oil SAE 90 for front axle differential	1.0	

Tightening torques		Nm
Dipstick guide tube to front axle housing		10
Oil drain plug to oil sump		25
Steering damper to body		50
Self-locking nut for drag link		35
Microencapsulated bolts for propeller shaft		25
Microencapsulated bolts for front axle shafts		70
Bottom section of oil sump to front axle housing		10
Engine mount to body M10		40
Engine mount to body (4MATIC) M8		20
Engine mount front to engine support		55
Engine support to crankcase		20
Oil sump or front axle housing to crankcase		
	Hexagon bolts M6	10
	Hexagon bolts M8	22

Bolts for oil pump	25
Sprocket wheel to oil pump	25
Torsion bar of fastening bolt	60

Special tools



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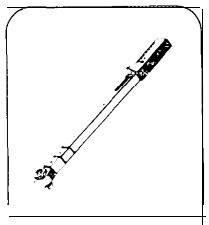

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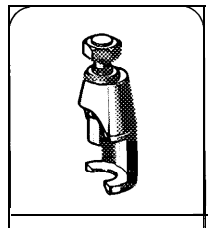


201 589 08 33 00

Shop-made tools

Metal panel for component compartment wall	Dimensions: approx.320 × 380 × 1
Guard plate for radiator/condenser	Dimensions: approx.480 × 600

Note

Model 124: The oil sump is sealed to the crankcase with a gasket.

4MATIC: The oil sump is sealed to the crankcase with sealant 001 989 61 20 10.

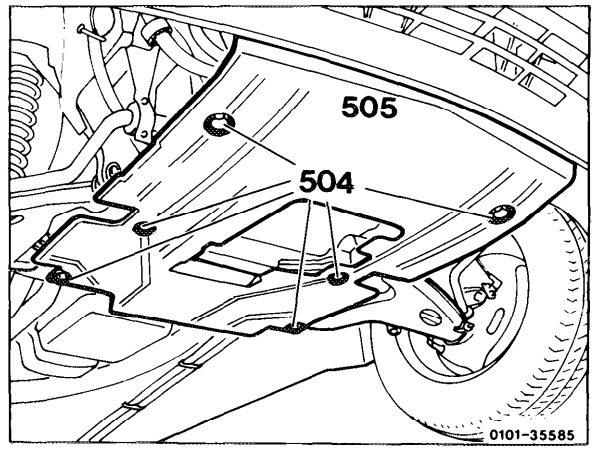
Removal, installation

1 Raise hood to vertical position (01-008).

2 Detach ground cable at battery.

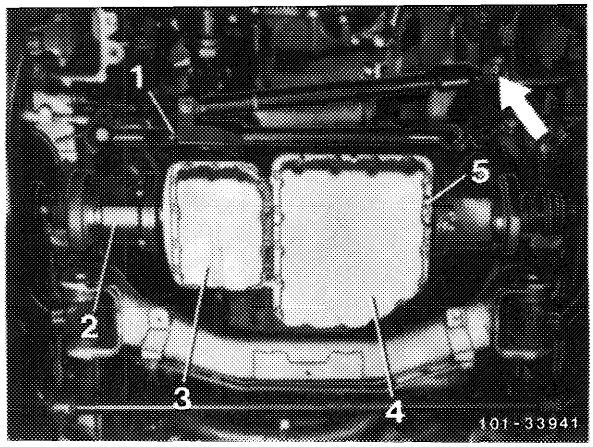
3 4MATIC: Remove air filter (09-400).

4 Unscrew bolts (504) and remove bottom engine compartment covering (505).



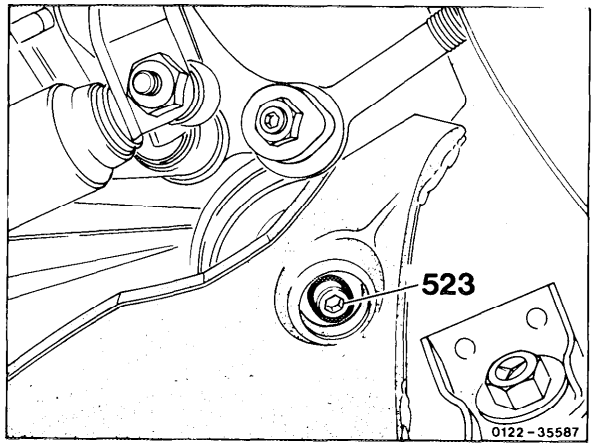
5 Drain engine oil (approx. 6.0 l) into a suitable vessel. Renew gasket. Oil drain plug tightening torque 25 Nm.

4MATIC: Unscrew oil drain plug (5).



6 Unscrew bolt (523) on left and right front engine mount from below. Tightening torque 40 Nm.

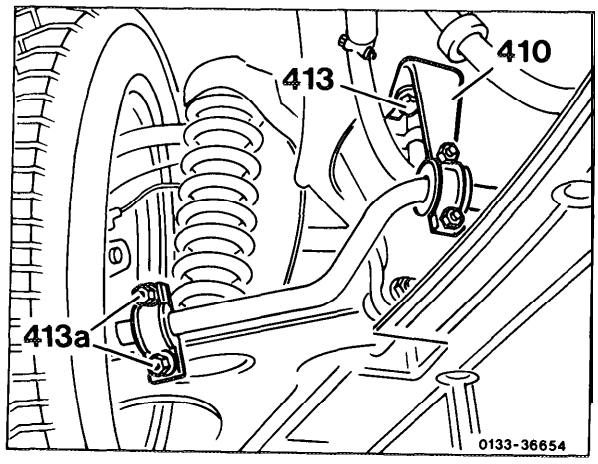
4MATIC: Unscrew 4 bolts from below. Tightening torque 20 Nm.



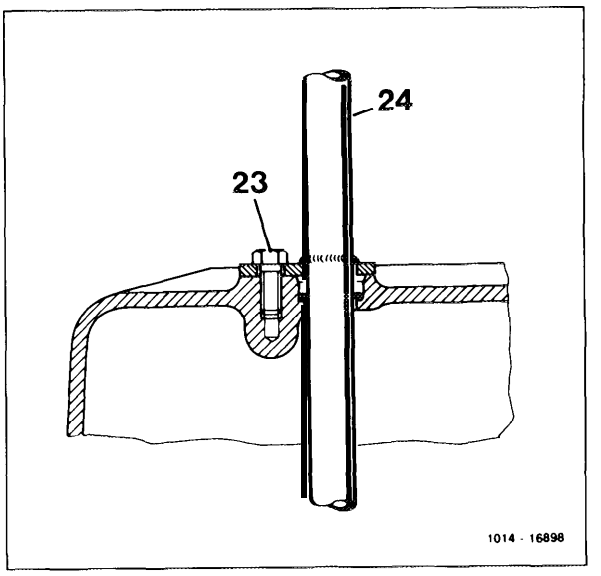
Model 124

7 Model 124: Unscrew bolt (413) for left and right spring leaf swing arm (410). Tightening torque 60 Nm.
Screw down nuts (413a).

8 Detach fan cowl.



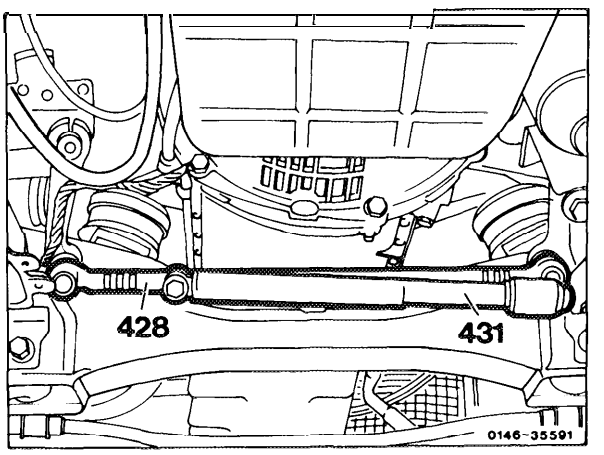
9 4MATIC: Unscrew bolt (23) and withdraw dipstick guide tube (24) from front axle housing, tightening torque 10 Nm.



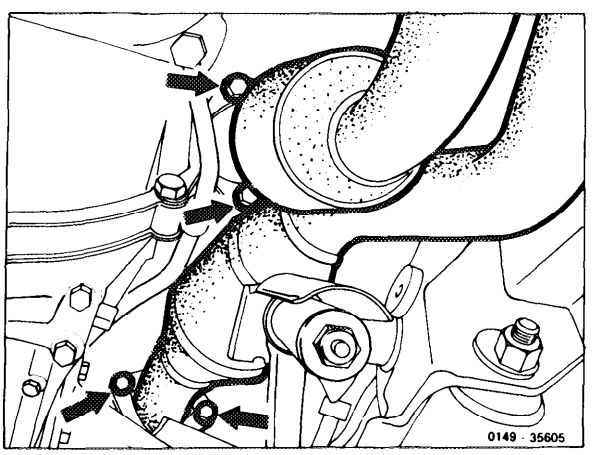
10 Remove drag link (428) with steering damper (431).
Unscrew steering damper (431) at body.
Remove drag link (428) using the tapered removal tool 201 589 08 33 00.

Note
Renew self-locking nuts.
Tightening torques:

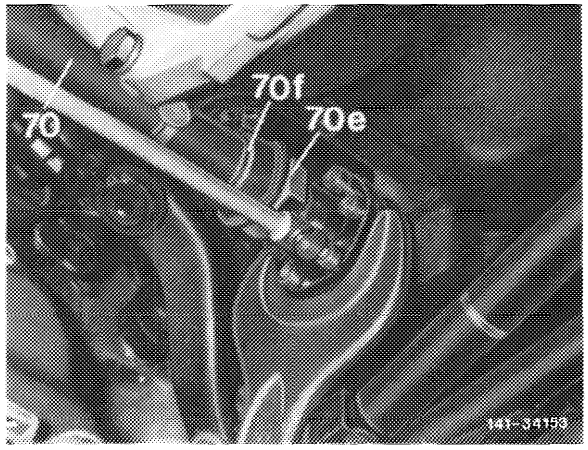
Steering damper	50 Nm
Drag link	35 Nm



11 Unscrew bolts (arrows) for exhaust system on the flange of the exhaust manifold.



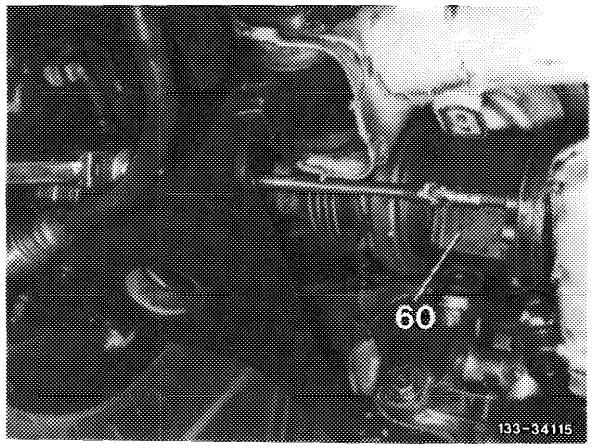
12 4MATIC: Unscrew propeller shaft (70) to the front axle at the front axle housing. When performing the step, hold the connecting flange with a 65 mm open-end wrench and unscrew six bolts (microencapsulated).



⚠
Do not hold the clamping nut (70e). Ensure that the connecting flange is not pushed out of the teeth.

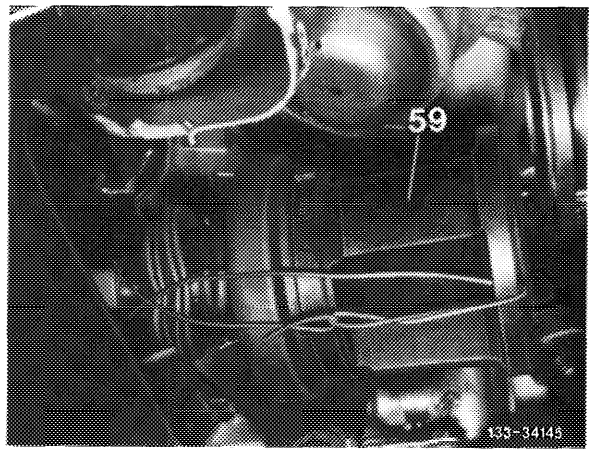
Installation instruction
Renew microencapsulated bolts, tightening torque 25 Nm.

13 4MATIC: Unscrew front axle shafts (60). Operate foot brake to slacken the six bolts (microencapsulated).



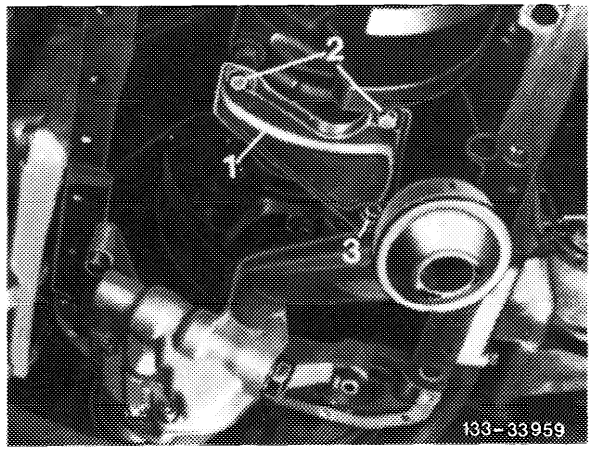
Installation instruction
Renew microencapsulated bolts, tightening torque 70 Nm.

14 4MATIC: Push front axle shaft (59) together as far as possible and fix in this position with wire. Place front axle shafts on transverse link. Do not pull inner joint too far apart and angle in order to prevent the needle-bearing tripod joint rollers of the journals at the tripod cross from dropping out.

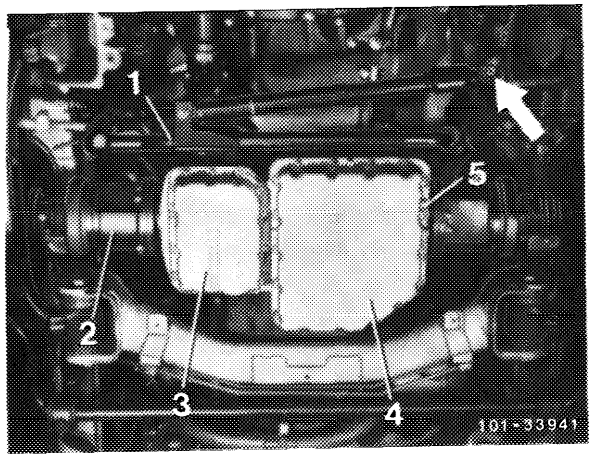


15 Detach plug connection of oil level switch on left of oil sump or front axle housing.

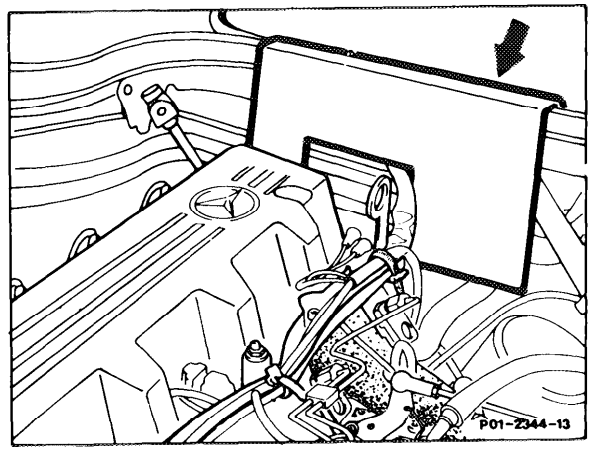
4MATIC: Unscrew bolts for bottom section of oil sump (4) and take off bottom section of sump (4), tightening torque 10 Nm.



16 4MATIC: Unscrew M6x12 bolts (2) and M6x18 bolt (3). Take off support (1) at intake snorkel of the oil pump.



17 Insert guard plate (arrow) between component compartment wall and engine.

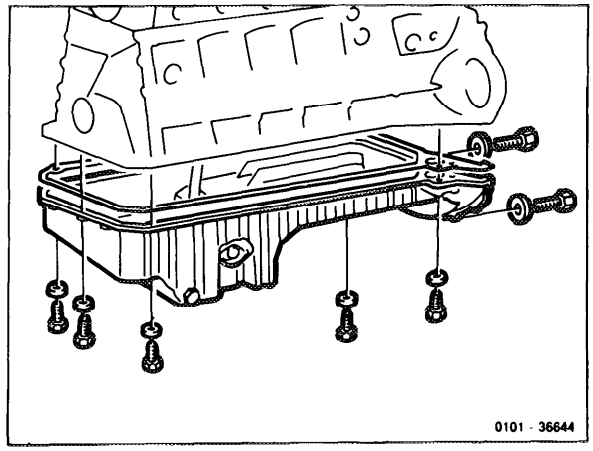


18 Model 124: Unscrew oil sump at the crankcase. Unscrew bolts.

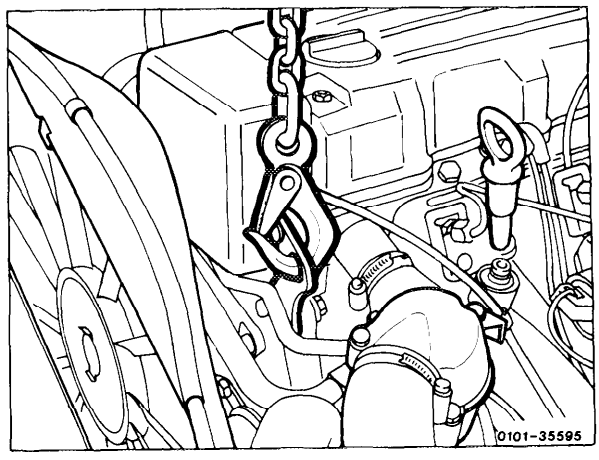
Tightening torque: M6 : 10 Nm
M8 : 25 Nm

Installation instruction

Renew oil sump gasket. Before bolting the oil sump tight, the mating face must be aligned relative to the transmission.



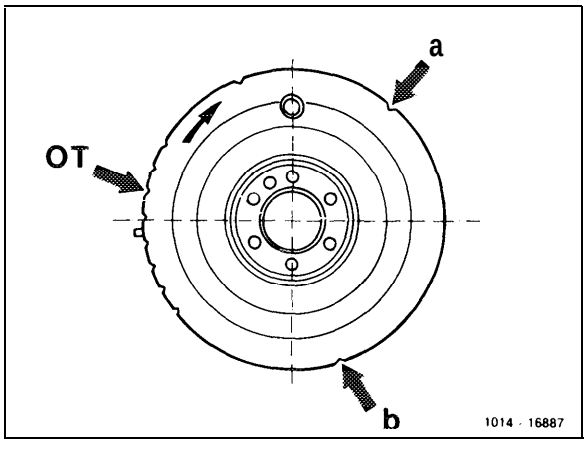
19 Attach engine hoist to the front suspension lug.



20 Model 124: Raise engine far enough to enable the oil sump to be removed to the front.

⚠
When raising the engine, ensure that the fan does not damage the radiator, and also pay attention to the rear suspension lug, oil filter and coolant hoses.

21 Set pistons of 3rd and 4th cylinder to TDC. The pistons of the 3rd and 4th cylinders are in the TDC position when the marking «a» on the vibration damper is aligned with the TDC pointer.

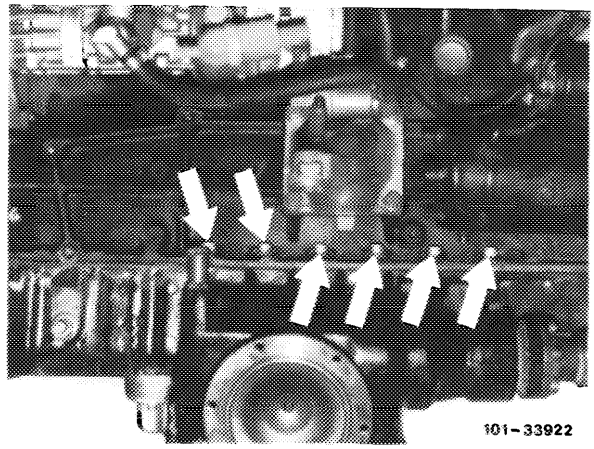


22 4MATIC: Unscrew lefthand engine support at the crankcase and take off together with engine mount.
Tightening torque 20 Nm.

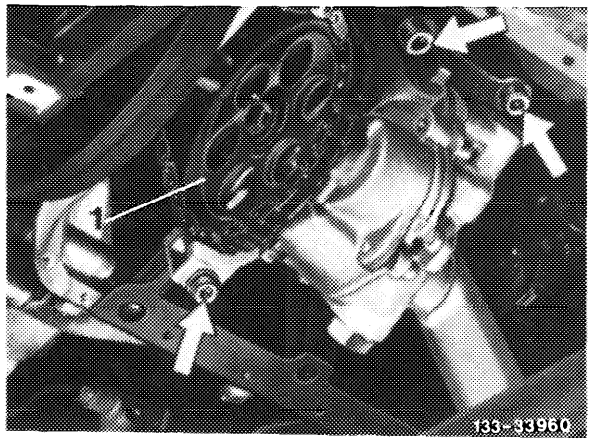
23 4MATIC: Unscrew front axle housing from transmission and crankcase.
Support front axle housing.
If car is fitted with automatic transmission, unscrew the oil line from or to the transmission along the front axle housing.

Note

The M8 bolts (arrows) on the lefthand side of t engine can be reached from above with the suitable tool combinations. In order to turn the two bolts below the starter, place screwdriver insert between starter and crankcase.



24 4MATIC: Lower front axle housing as far as possible. Unscrew bolt for sprocket wheel (1) and take off sprocket wheel (1), tightening torque 25 Nm.
Unscrew bolts (arrows) and take out oil pump down the way, tightening torque 25 Nm.
Take off front axle housing to the rear, paying attention to the drive chain of the oil pump.



25 4MATIC: Clean mating surfaces on front axle housing. Apply sealant 001 989 61 210 to the mating surface on the front axle housing
(a = silicone bead Ø 1.5 mm).
First of all mate front axle housing to the transmission then bolt to crankcase.

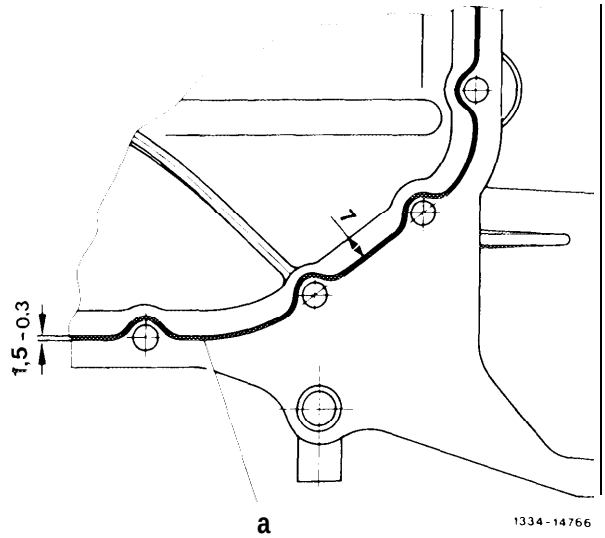
Installation instruction

Pay attention to different lengths of bolts.

Tightening torque M6 : 10 Nm
M8 : 22 Nm

Renew self-locking nut and microencapsulated bolts.

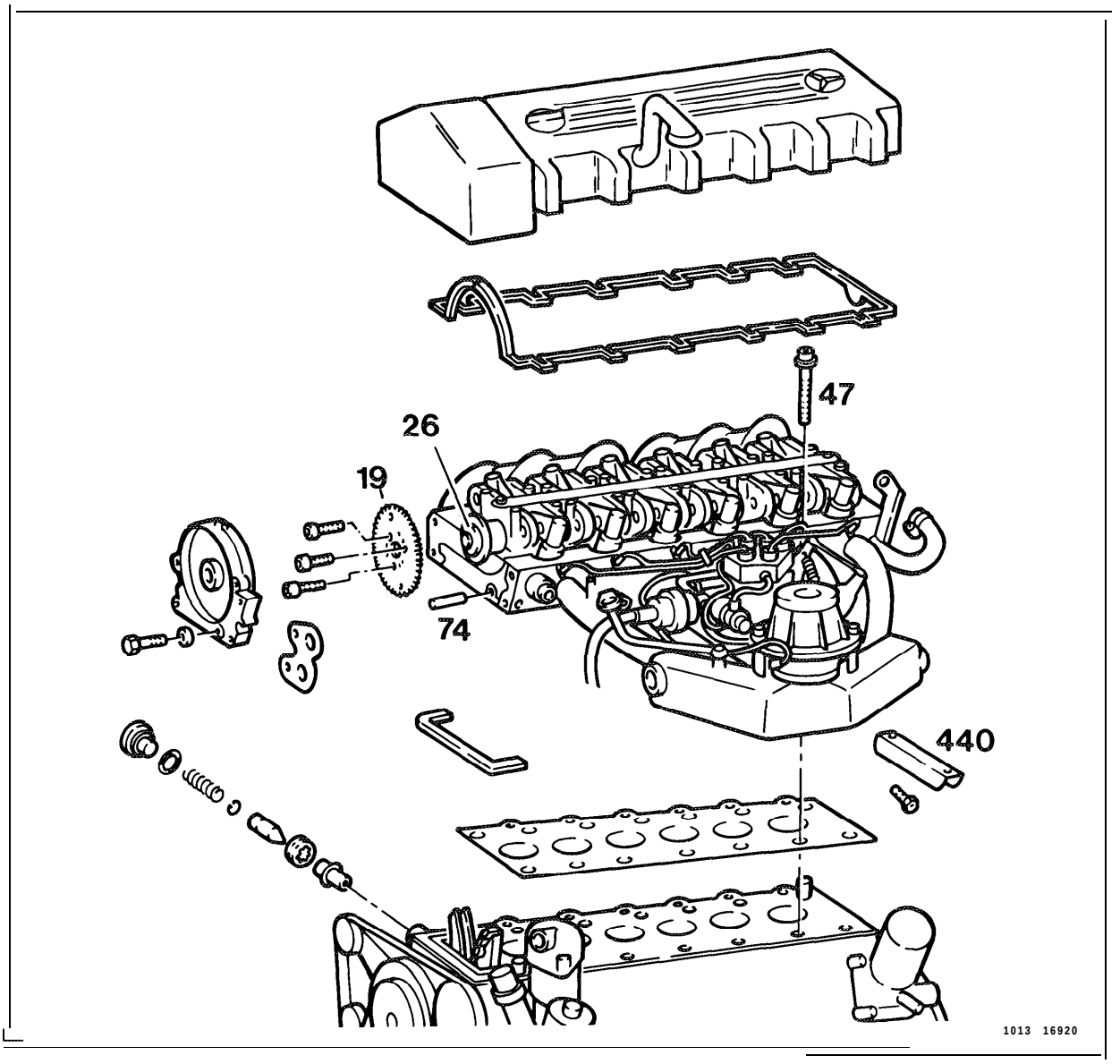
Install in the reverse order.



a= bead diameter of 1 5 mm

01-415 Removing, Installing Cylinder Head

Job No. of job texts and job values or standard texts and flat rates 01-5800, 01-5855

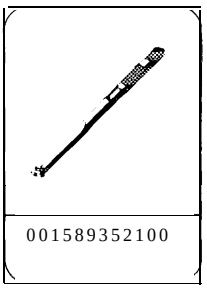


Hood	raise to vertical position (01-008).
Coolant	drain, pour in (20-010).
Front cover at top	remove, install (01-212).
Camshaft gear (19)	mark relative to camshaft (26), detach and attach (steps 4 to 7).
Chain tensioner	remove, install (05310).
Sliding rail pin (74)	withdraw, knock in, impact extractor 116 589 20 33 00 (step 8).

Bracket of dipstick guide tube and inlet pipe support (440)	unscrew, screw on (steps 9 and 10).
Fuel lines	detach, attach, briefly open fuel filler cap beforehand (step 14).
Bowden cable (accelerator control)	detach, attach (30-325).
Control pressure cable	detach, attach (step 16).
Coolant hoses and heating water return line	detach, attach (steps 11 and 12).
Engine wiring harness	detach, attach (steps 17 to 19).
If automatic transmission fitted, dipstick guide tube	unscrew, screw on (step 13).
Exhaust system at exhaust manifold	unscrew, screw on (step 20).
Cylinder head with intake manifold and exhaust manifold	take off, fit on (steps 21 to 23).
Camshaft (26)	set to marking (steps 24 and 25).
Piston of No. 1 cylinder	set to TDC (step 26).
Cylinder head bolts (47)	check, tighten (steps 27 to 29).

Tightening torques and angle of rotation torque		Nm
Cylinder head bolts when engine cold	1st stage	70
	2nd stage 90° angle of rotation	
	3rd stage 90° angle of rotation	
Bolts for cylinder head cover		8.5
Screw plug of chain tensioner		50
Threaded ring of chain tensioner		30
Camshaft gear to camshaft (hex. socket bolt M6, 1st version)		11
Camshaft gear to camshaft (Torx bolts M7, 2nd version)		16
Distributor rotor to follower (reference value)		2.5
Follower to camshaft		21
Front cover at top to cylinder head		21

Special tools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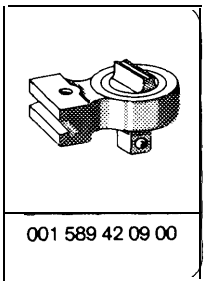
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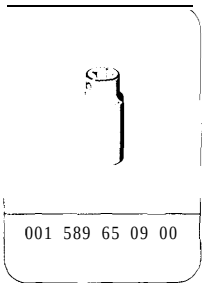
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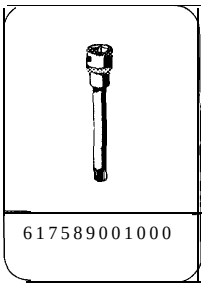
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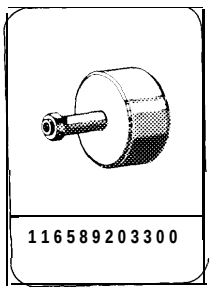
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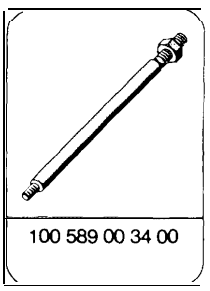

100 589 00 34 00

Note
Detach cylinder head together with camshaft, intake manifold and exhaust manifold after engine has cooled down.

Removal, installation

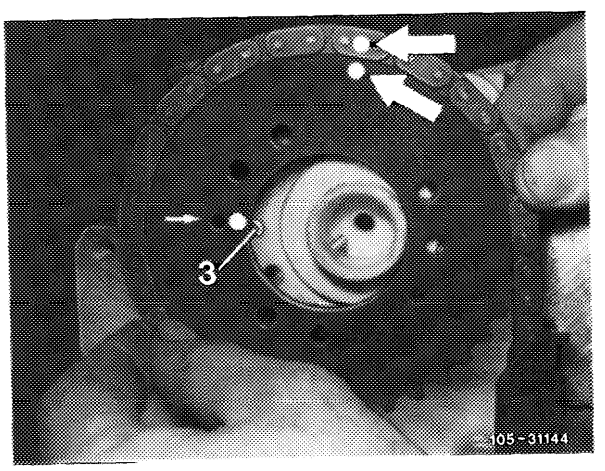
1 Raise hood to vertical position (01-008).

2 Drain coolant at crankcase (20-010).

3 Remove front cover at top (01-212).

4 Mark position of camshaft gear relative to camshaft. This is done by applying colored marking next to fixing pin (3) on the camshaft gear.

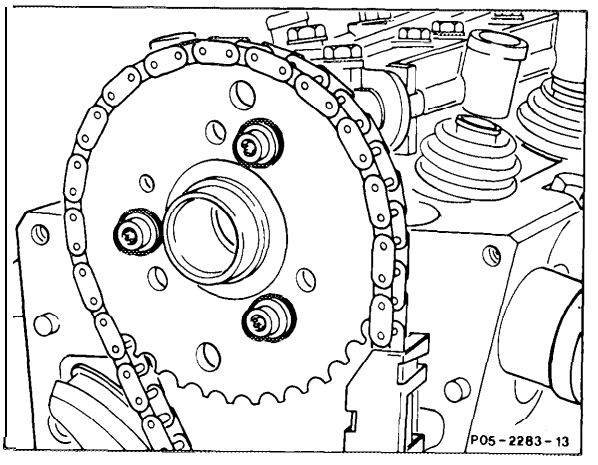
5 Remove chain tensioner (05310).



6 Unscrew bolts (16).

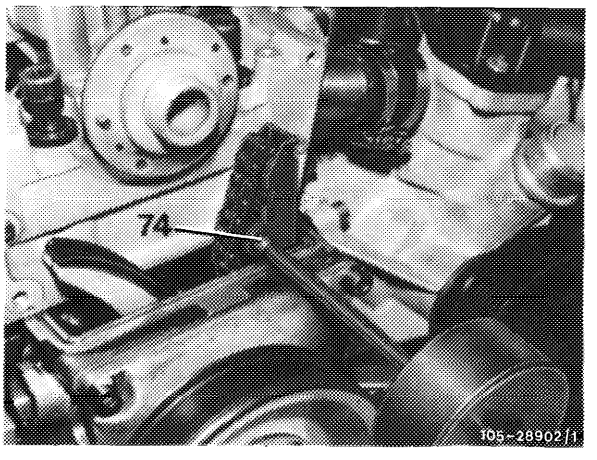
Tightening torque

Hex. socket bolts	M6:	11 Nm
Torx bolts	M7:	16 Nm



7 Pull off camshaft gear (19) by hand.

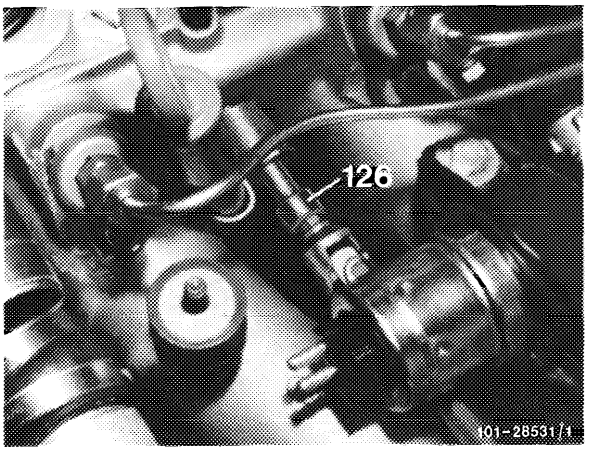
8 Use impact extractor 116 589 20 33 00 to withdraw slide rail pin (74).



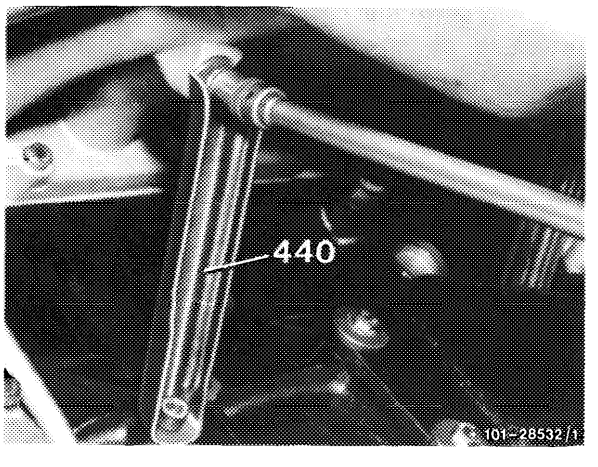
Installation instruction

The thread in the slide rail pin (74) must be facing forward in direction of travel when it is knocked in.

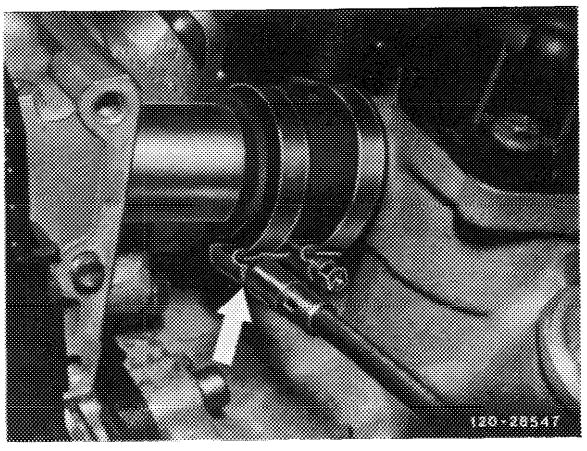
9 Unscrew bracket (126) for dipstick guide tube.



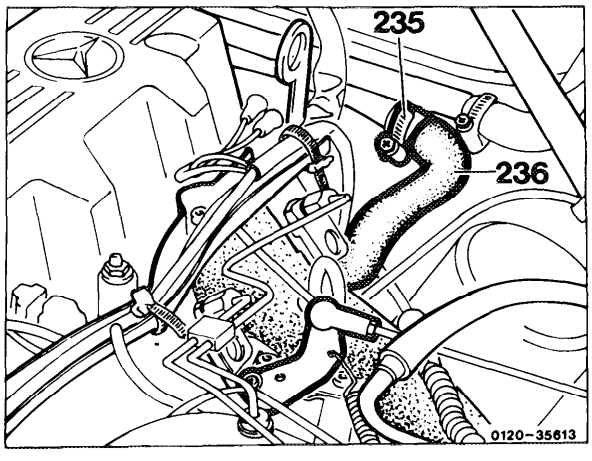
10 Unscrew intake manifold support (440) at top, detach at bottom.



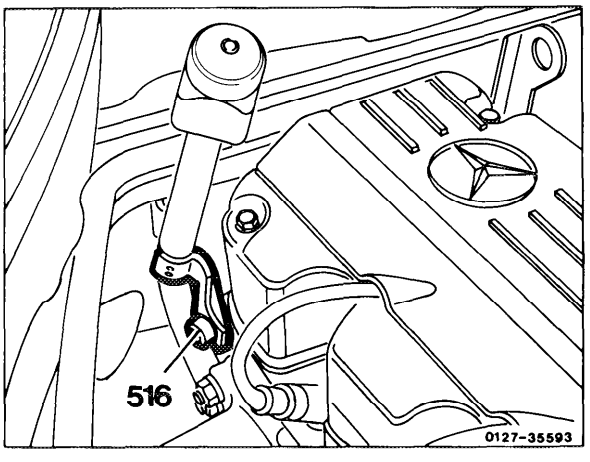
11 Slacken hose clips (arrow) on the coolant hose to the coolant pump.



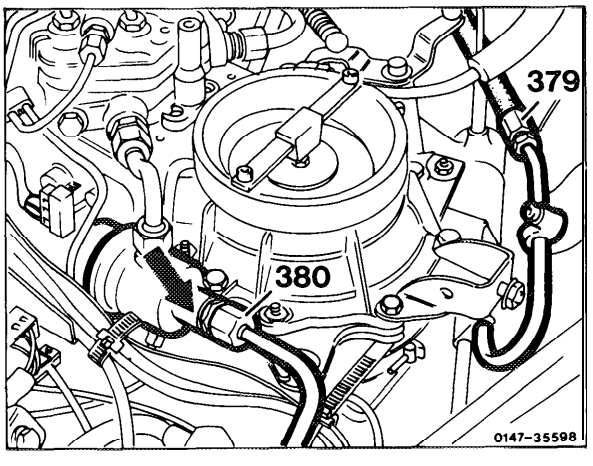
12 Slacken hose clip (235). Detach heating water return line (236).



13 If automatic transmission fitted: Unscrew bolt (516).



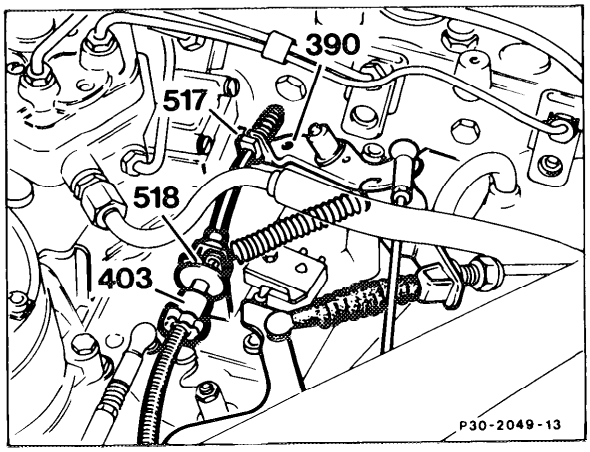
14 Briefly open fuel filler cap to release the pressure in the fuel tank.
Unscrew fuel lines (379, 380).
Hold the connection fitting (arrow) to prevent it moving when slackening the fuel line (380).



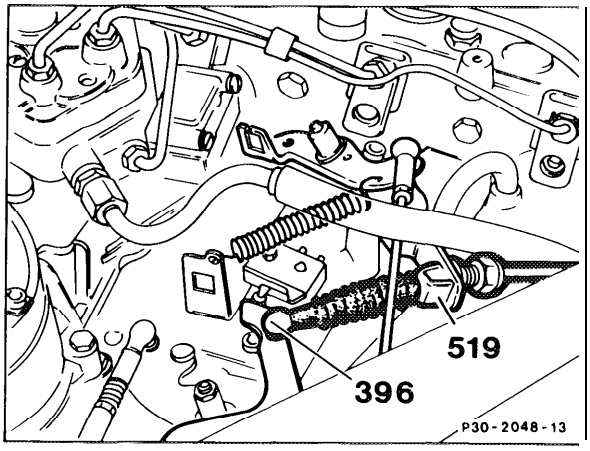
15 Detach Bowden cable (accelerator control). Press plastic guide (517) out of its seat in the fulcrum lever (390) and withdraw Bowden cable (403) through the slot in fulcrum lever (390). Compress the links of the plastic clip (518) and push plastic clip with the Bowden cable (403) to the rear through the bracket.

Installation instruction

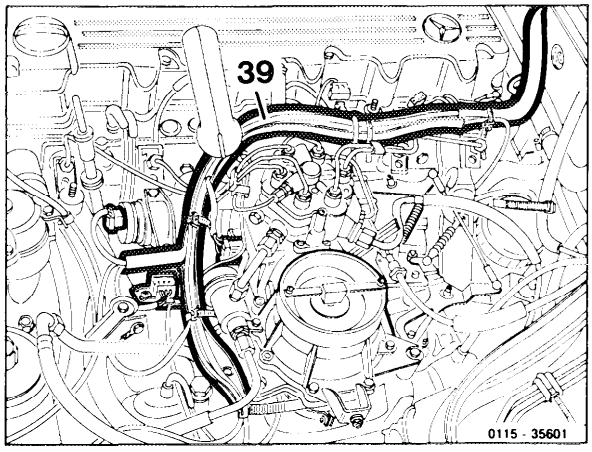
Adjust Bowden cable (403) (30-325).



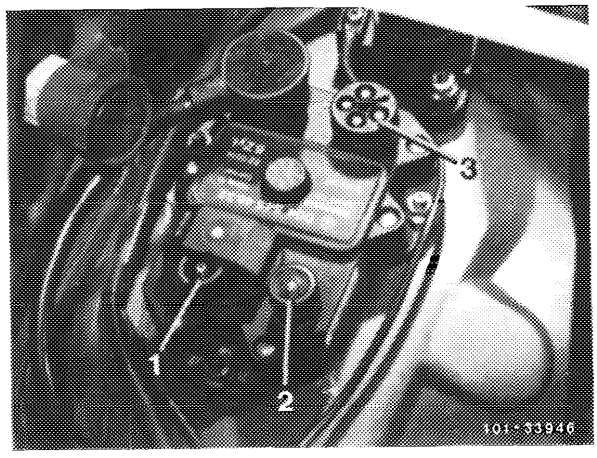
16 Detach control pressure cable (396). Compress links (519) of the plastic clip and guide plastic clip with linkage through the bracket.



17 Detach engine wiring harness (39). Slacken all the cable straps of the engine wiring harness (39). Detach all the plug connections along the engine wiring harness (39).

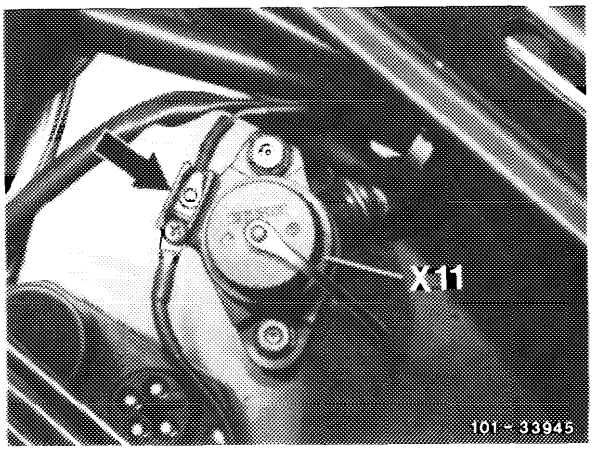


18 Detach green control cable and vacuum line at the connector-sensor ignition control unit.

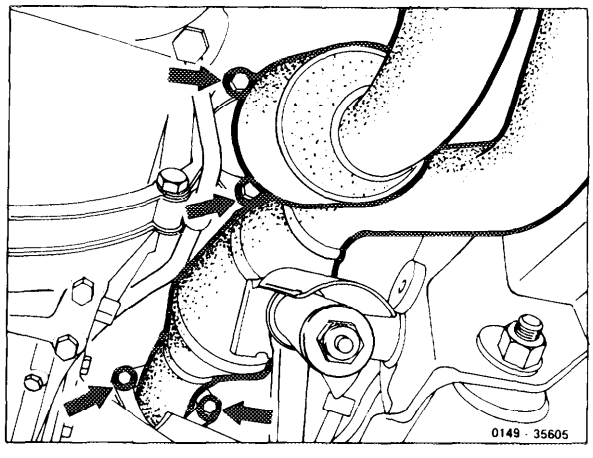


1 Vacuum connection
2 Control line-position sensor connection
3 Connector-sensor connection

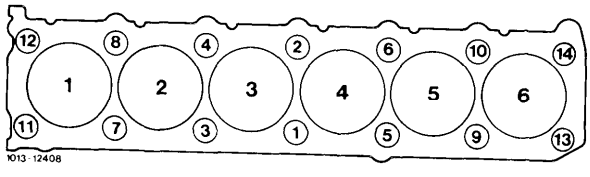
19 Detach terminal block terminal TD (arrow) next to diagnostic socket (Xl 1), unscrew diagnostic socket (Xl 1), detach grey cable from the TDC sensor on the rear of the diagnostic socket (Xl 1).



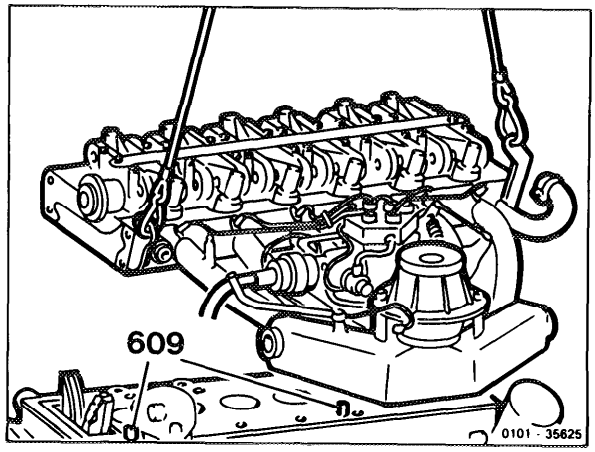
20 Unscrew bolts (arrows) for exhaust system on the flange of the exhaust manifold.



21 Slacken cylinder head bolts when engine cold in stages in the reverse order to the tightening diagram, starting with 14.



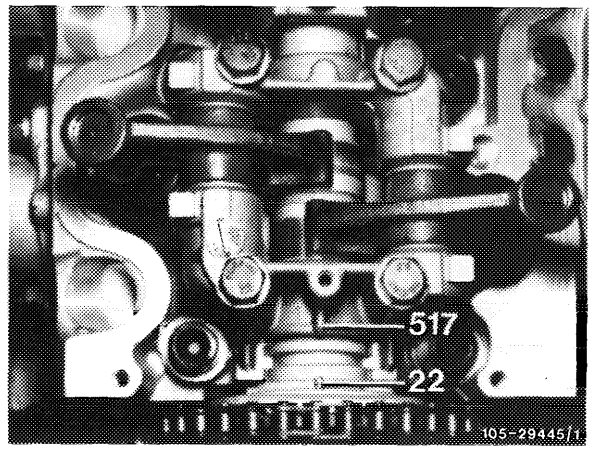
22 Attach engine hoist to the suspension lugs of the engine.
Take off cylinder head.



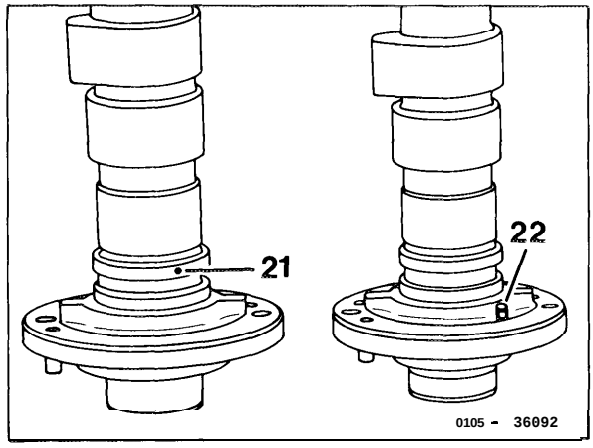
23 Renew cylinder head gasket.

Installation instruction
Pay attention to the 2 fit pins (609) for locating the cylinder head on the crankcase.

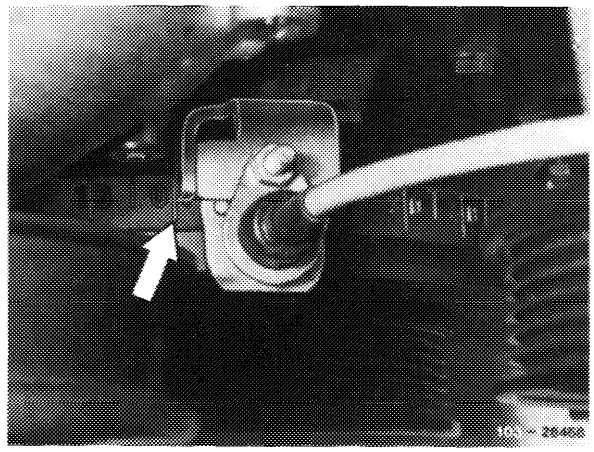
24 Turn crankshaft so that pin (22) or positioning bore of the camshaft is aligned with the marking (517) on the 1st camshaft bearing.



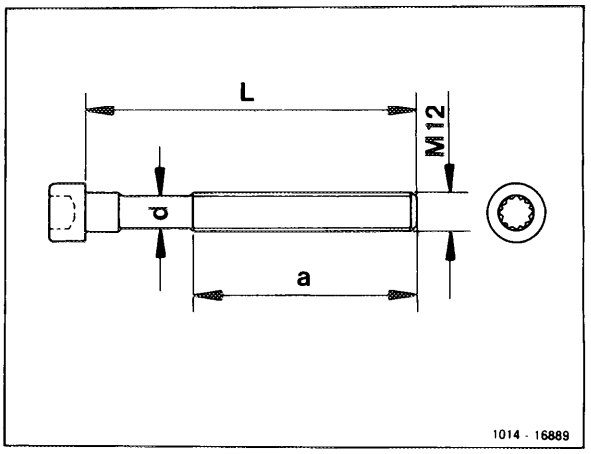
25 Effective 12/86 only the positioning bore (21) is provided in place of the pin (22).



26 Position piston of No. 1 cylinder to TDC (arrow).

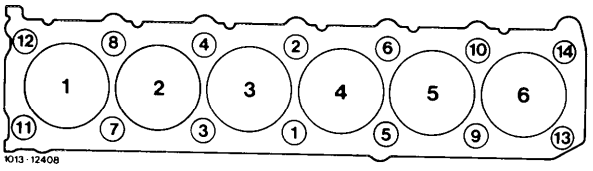


27 Check cylinder head bolts.
Each time the cylinder head bolts are tightened they are subject to a certain permanent stretch. If the maximum length (L) of 108.4 mm is exceeded, the bolts should be scrapped and replaced by new ones.



28 Oil the thread of the cylinder head bolts and also the contact surface of the bolt head and insert.

29 Tighten the cylinder head bolts in stages in the order shown in the tightening diagram, beginning with 1.
1st tightening stage 70 Nm
2nd tightening stage 90° angle of rotation
3rd tightening stage 90° angle of rotation



30 Install in the reverse order.