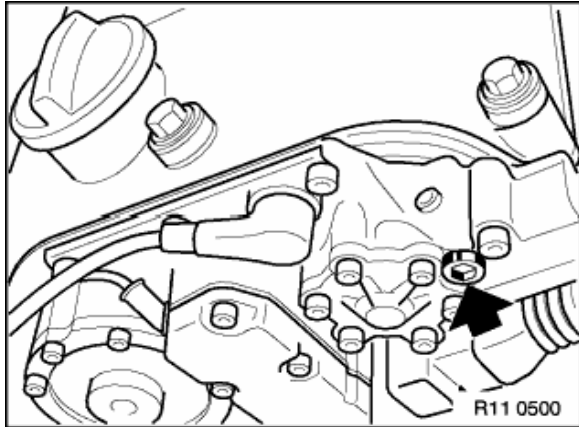


Interrogate fault memory and make a documentary record.

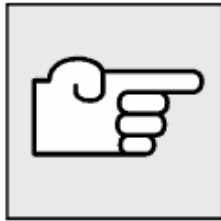
Remove cylinder head cover,
refer to 11 12 000.

Remove fan clutch with fan impeller and fan cowl,
refer to 11 52 020 / 17 11 031.



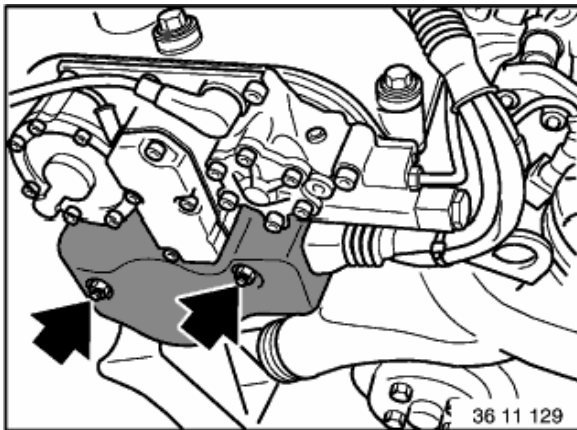
If necessary, replace filter screw on VANOS adjustment unit.

Tightening Torque,
refer to Technical Data 11 36 8AZ.



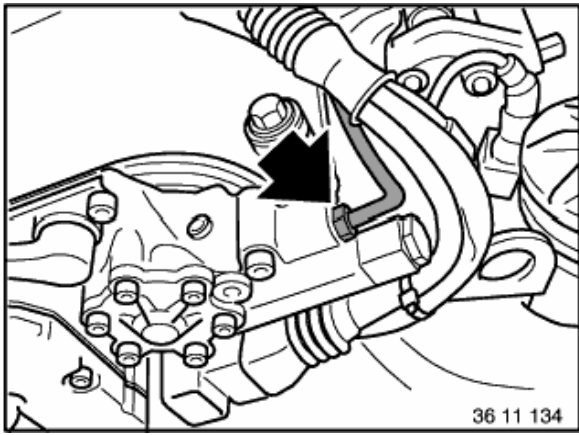
Removal

Removal of VANOS adjustment unit is described separately from installation. Assembly sequence for removal and installation is different.

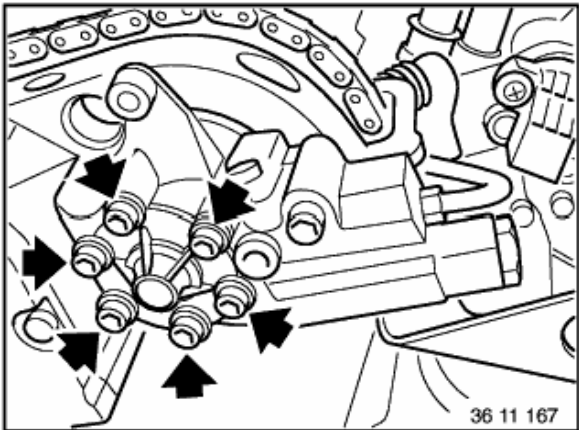


Remove cover from plug connectors.

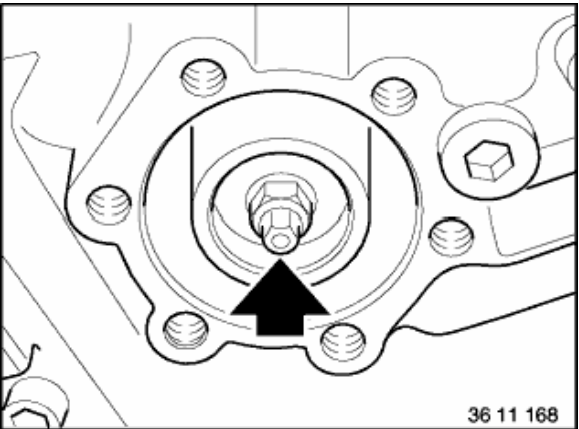
Disconnect plug connections on solenoid valves.



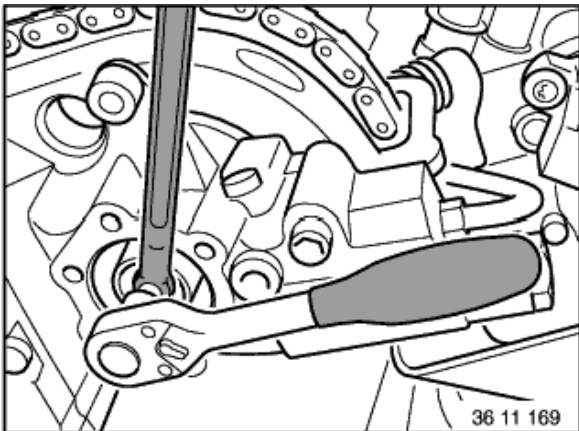
Unscrew oil pipe from VANOS control unit.



Unscrew cover bolts.



Remove cover. Collar nut is accessible.



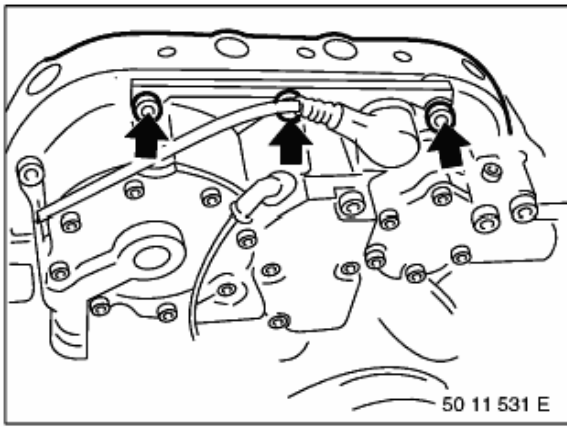
Caution!

Risk of damage to shaft.

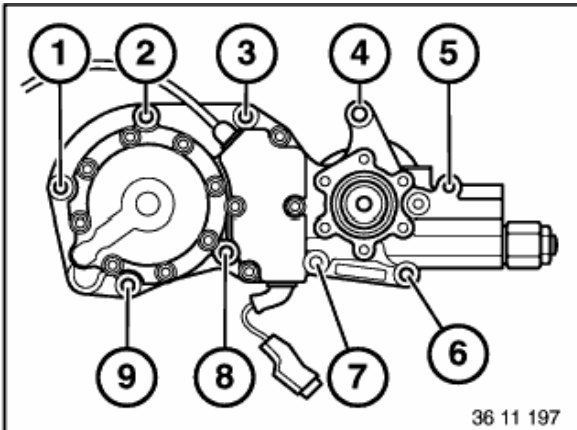
Grip shaft with a hexagon socket. Release collar nut with a ring wrench.

Note:

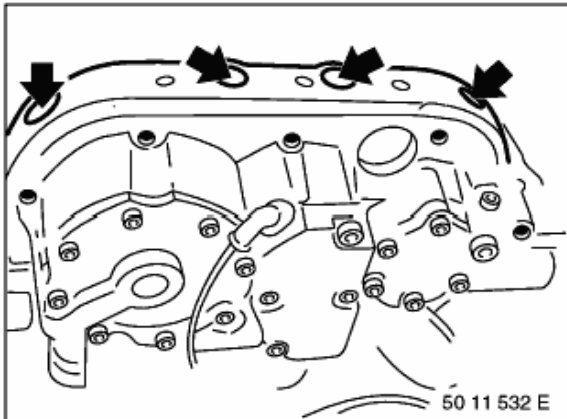
Only the use of an exactly fitting hexagon nut will prevent the hexagon from being damaged and the shaft from being bent.



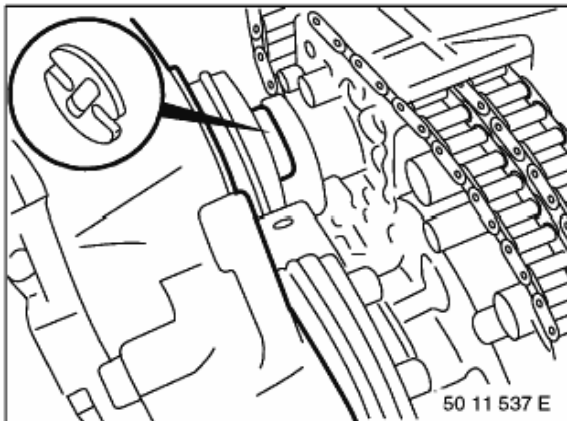
Remove TDC sensor for cylinder identification.



Unfasten screws on VANOS adjustment unit.



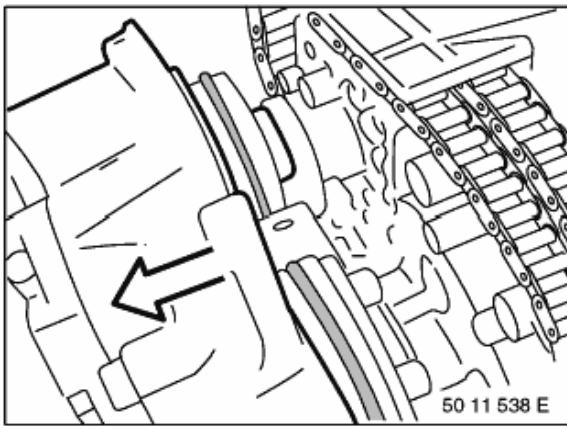
Unscrew end cover (VANOS bridge) on timing case.



Caution!

Driver on radial piston pump can fall into engine.

For this reason, drive must be held in position with a finger while pulling off VANOS control unit.



Pull off VANOS control unit.

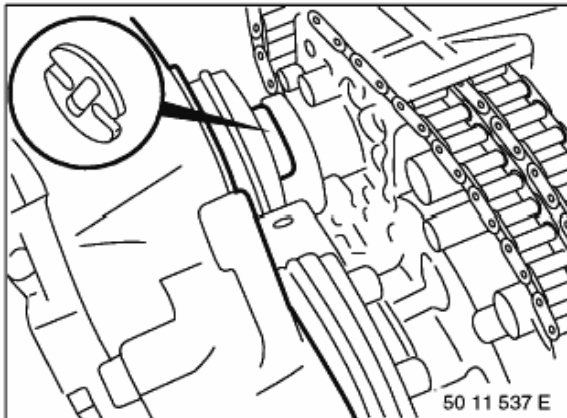
Note:

Splined shaft remains in VANOS unit on engine.

Installation

Installation of VANOS adjustment unit is described separately from removal. Assembly sequence differs between removal and installation.

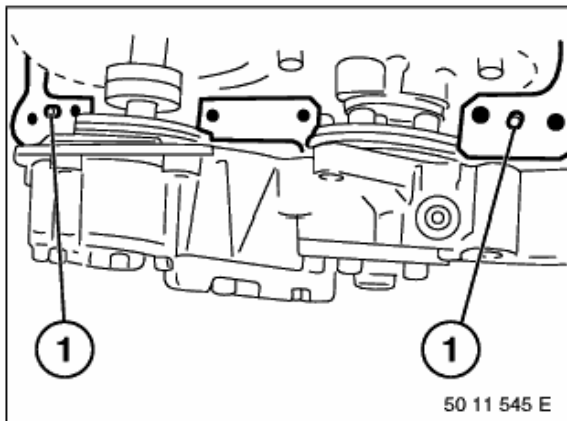
Replace O-rings on VANOS adjustment unit and splined shaft.



Fit driver of radial piston pump to drive shaft using grease as an aid.

Align radial piston pump on driver.

Slide on VANOS adjustment unit until sealing rings are still just accessible.

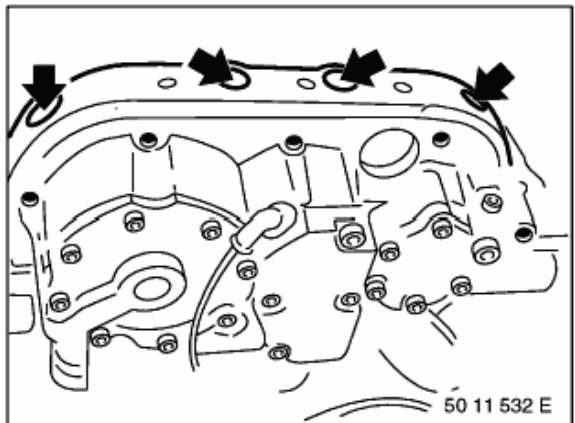


Clean and degrease sealing faces between end cover (VANOS bridge) and timing case.

Apply thin and uniform coat of Drei Bond 1209 sealing compound, refer to BMW Parts Service.

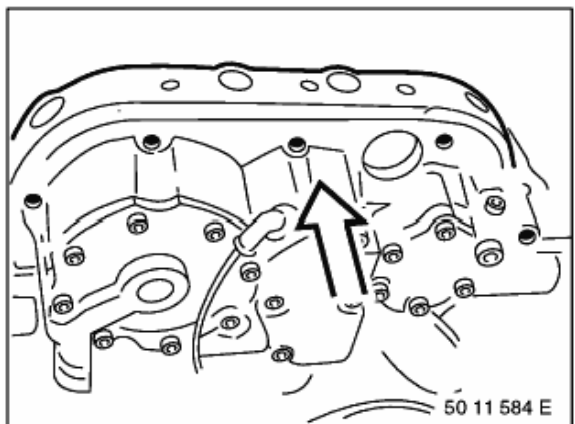
Pay attention to dowel pins (1).

Fit end cover (VANOS bridge) to timing case and tighten down.



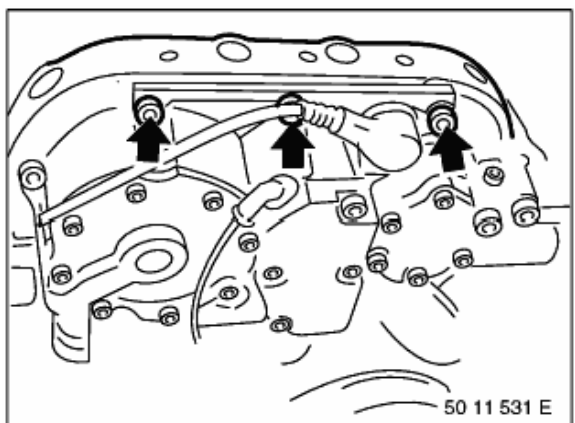
50 11 532 E

Slide VANOS adjustment unit up to timing case.



50 11 584 E

Fit TDC sensor for cylinder recognition.

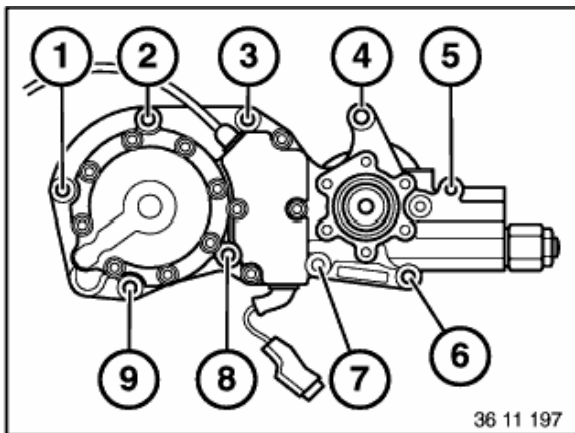


50 11 531 E

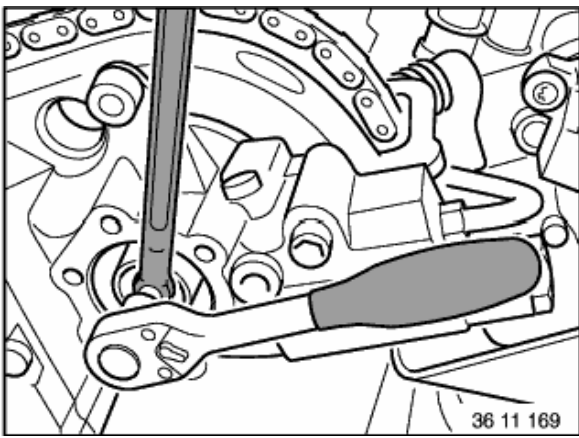
Note:

Secure ground tape with screw (7).

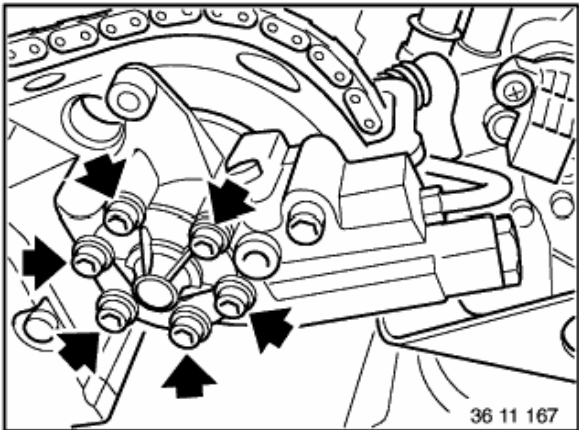
Insert screws (1 ... 9) in VANOS adjustment unit and tighten down in two passes.



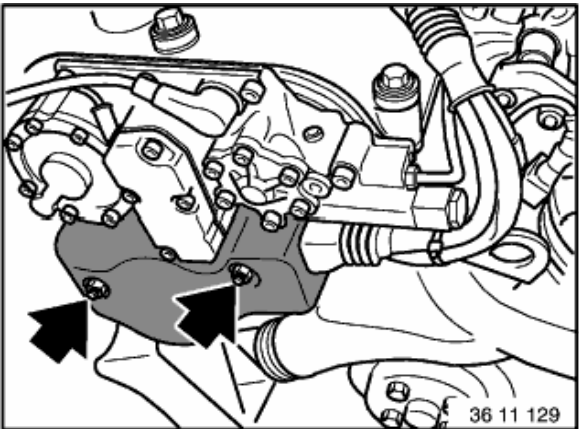
36 11 197



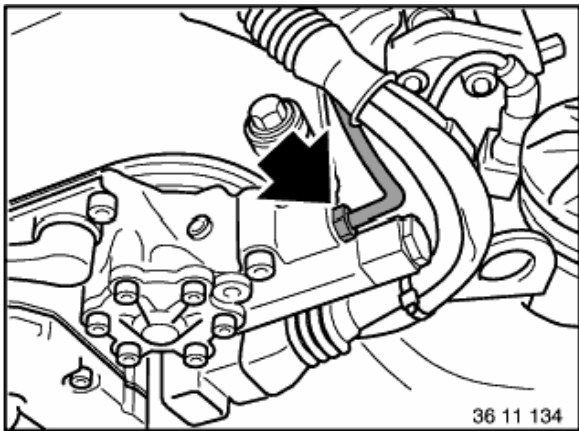
Fit new collar nut and secure with Loctite 270.
Brace against shaft and tighten collar nut.
Tightening Torque,
refer to Technical Data 11 36 6AZ



Clean thread in VANOS adjustment unit.
Replace O-ring in cover.
Align recess on cover with filter screw.
Install screws with Loctite 270, refer to BMW Parts Service and
tighten down.
Tightening Torque,
refer to Technical Data 11 36 7AZ



Insert screw connections in solenoid valves.
Fit cover to plug connections.



Fit oil pipe to VANOS adjusting unit.
Tightening Torque,
refer to Technical Data 11 36 9AZ
Assemble engine.