

Removing the gearbox

Special tools: [998 5972](#) , [999 5006](#) , [999 5033](#) , [999 5045](#) , [999 5185](#) , [999 5186](#) , [999 5259](#) , [999 5460](#) , [999 5463](#) , [999 5560](#) , [999 5562](#) , [999 5563](#) , [999 5681](#) , [999 5716](#) , [999 5972](#)

Filling in Diagnostic and Check lists

Note! Before replacing the gearbox, fill in [Diagnostic / check list](#) .

Removing engine compartment components

Remove:

- the air cleaner housing ACL assembly with the intake pipe
- the battery
- the battery shelf.



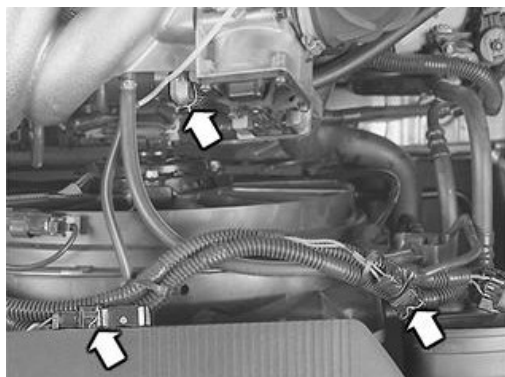
Removing the connector and vacuum hose

Remove the connector under the panel for the radiator.

Pull the connector straight out towards the engine.

Unhook the connector from the fan shroud.

Remove the vacuum hose from the intake manifold.

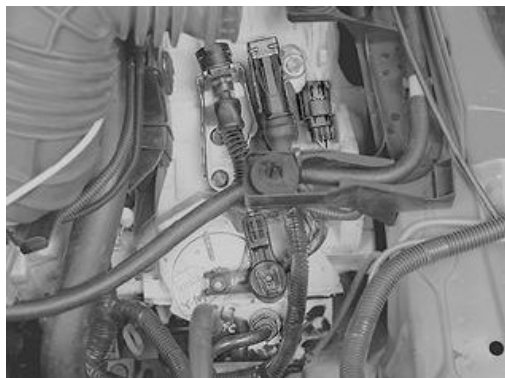


Removing the screw for the torque rod / torque control arm at the engine

Disconnect the ground strip from the bulkhead.



Removing the gearbox cable from the lever.
Removing the mounting on the gearbox and the



oil pipe

Remove:

- the gearbox cable from the lever and the screws from the bracket on the gearbox
- the large connector
- the 2 nuts for the cable conduit on the gearbox
- the connector at the cable conduit furthest in at the gearbox
- the oil pipe from the gearbox. Plug the gearbox and pipe.

Separate the connector beside the large connector.

Removing the mounting screws for the gearbox / starter motor

Fold the connectors, cable harness and cable conduit out of the way of the engine / gearbox.

Remove:

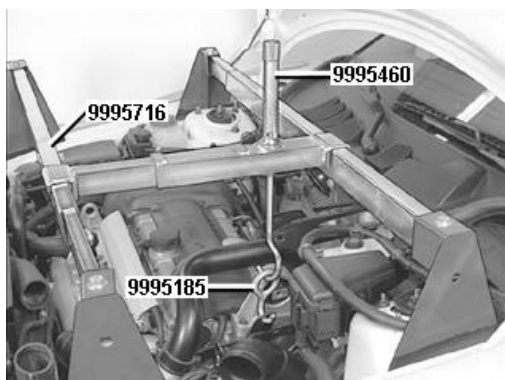
- the 3 screws for the gearbox / engine
- the 2 screws for the starter motor. One screw is located under the starter motor
- the ignition setting sender.



Installing lifting tools

Install lifting beam [999 5716](#) . Install lifting hooks [999 5460](#) and [999 5185](#) .

Lift the engine to relieve the load on the engine pads.



Removing both the front wheels. Removing the control arms, the track rod, the brake pipe bracket and the screw for the drive shaft on both sides

Remove:

- the link for the anti-roll bar up at the spring strut
- the track rod from the stub axle. Use puller



999 5259

- the screw for the brake pipe bracket
- the screw for the drive shaft.

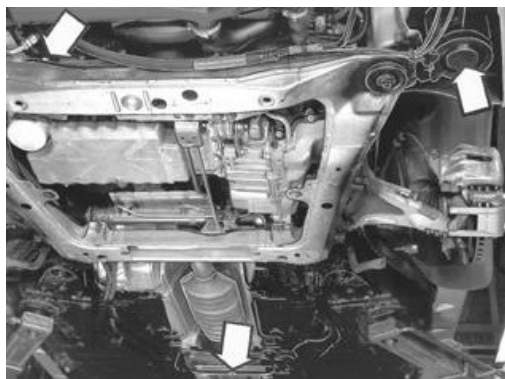


Removing the front protective cover

Remove the screws and the cover.



Removing the screws for the cable conduit and ground lead bracket



Removing under body components

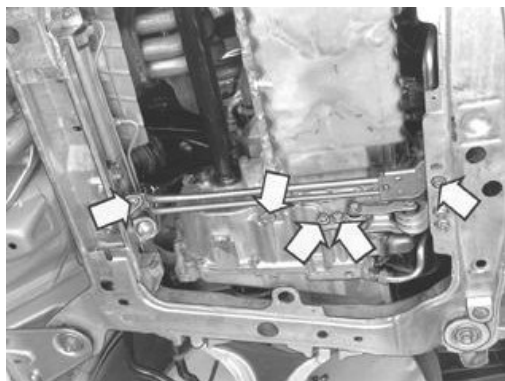
Remove the carbon filter container with its hoses from the sub-frame.

Cut off the tie straps for the hoses. Hang up the container in the bodywork.

Loosen the clamp for the exhaust pipe behind the three-way catalytic converter (TWC).

Slacken off the screw for the bracket for the ground lead.

Remove the screw for the ground lead from the



gearbox.

Draining the gearbox oil

Remove:

- the screws for the oil pipe brackets
- the two screws for the torque rod mounting support on the gearbox.

Drain the gearbox oil.

Note! Drain the oil only if replacing the gearbox or changing the oil. Tighten the drain plug to 40 Nm.

Warning! The oil may be extremely hot.

Removing the oil pipe from the gearbox

Collect the, approximately, 1/2 – 1 dl of oil that runs out when the oil pipe is detached from the gearbox.

Slacken off the screw. Pull the pipe out of the gearbox.

Plug the oil pipe and the gearbox.



Removing the collision protection system over the steering gear (right-hand drive cars only)

See [Removing the gearbox](#) .

Disconnecting the control arms from the wheel spindles

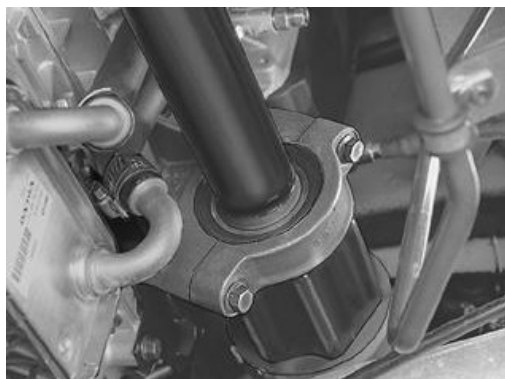
See [Removing the gearbox](#) .

Removing the right drive shaft

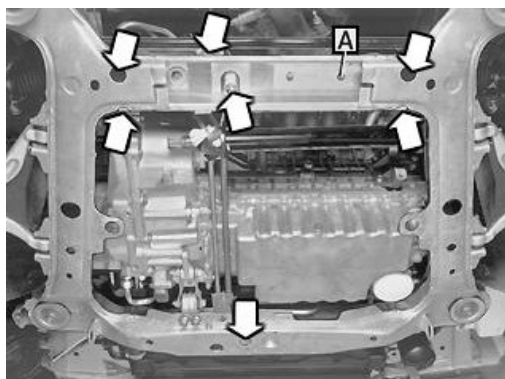
Remove the bearing cap.

Pull out the inner section of the drive shaft. At the same time fold out the spring strut.

Caution! Take care not to damage the seal in the gearbox.



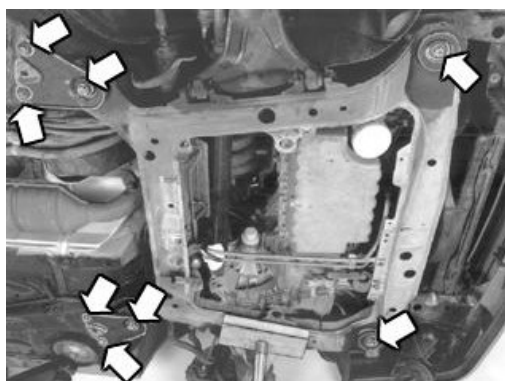
Removing the screw for the front engine pad in the sub-frame



Slacken off the screw for the engine pad.
Remove the 5 mounting nuts for the steering gear in the sub-frame.

Right-hand drive cars only:

Remove the nut (A) for the collision protection system / sub-frame.



Preparations for removing the sub-frame from the car

Position mobile jack [998 5972](#) at light contact under the left-hand side of the sub-frame as support.

Remove the screws for the sub-frame support brackets in the body (both sides).
Unscrew the two screws between the frame and body (right side) by approximately 15 mm.
Remove the screws on left-hand side.

Preparatory lowering of the sub-frame (applies only to right-hand drive cars only)

Removing the gearbox .

Lowering the sub-frame

See [Removing the gearbox .](#)

Mounting the steering gear on the left-hand side in the hole in the frame member flange

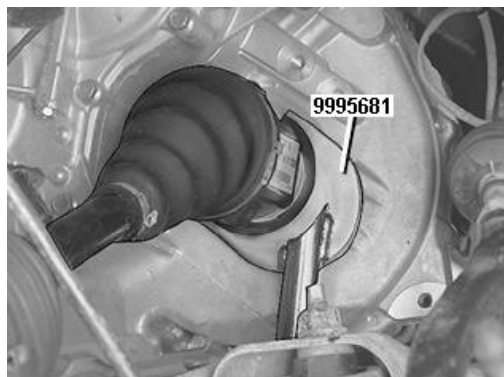
See [Removing the gearbox .](#)

Removing the rear engine mounting from the gearbox



Slacken off the clamp for the cable for the heated oxygen sensor (HO2S).

Remove the three screws for the engine mounting.



Removing the left drive shaft

Turn and fold out the spring strut. Knock the end of the drive shaft with a rubber or copper mallet. Pull the end of the drive shaft out of the hub.

Remove the drive shaft from the gearbox. Use lever [999 5681](#) between the gearbox and the inside of the drive shaft.

Caution! Pull at the constant velocity joint, not the shaft, when removing the drive shaft. This is to help prevent excessive load on the joint axial stop. Take care not to damage drive shaft seal and boots.

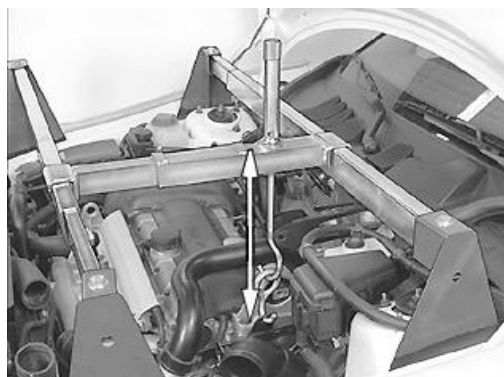
Lower the car

Lowering the engine and the gearbox

Lower using the lifting hook until the distance between the lifting beam and the spark plug cover is approximately 320 mm.

Note! If the engine is lowered too much, the exhaust pipe may press the steering gear down.

Note! Make sure that all cables and hoses are not pinched or stretched. Check that the engine dipstick is free from the fan.



Raise the car

Preparations for removal of the gearbox

Remove:

- the contact rubber on the sub-frame
- the nut for the wing liner. Bend out the wing liner.

Drill out the four rivets in the front edge of the left wing liner.

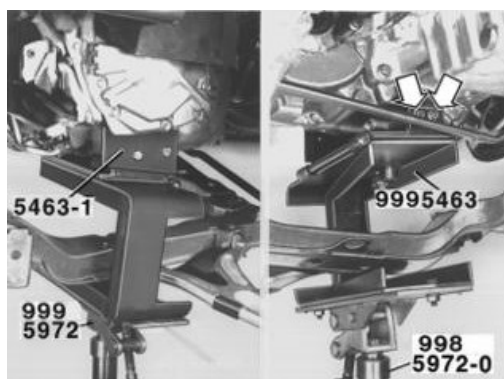
Installing the mobile jack and fixture

Use mobile jack [998 5972](#) together with the fixtures [999 5972](#) and [999 5463](#).

Install the gearbox fixture on the gearbox: Use the screws for the torque rod mounting.

At the same time, locate the bearing plate (marked 999 5463-1) on the fixture.

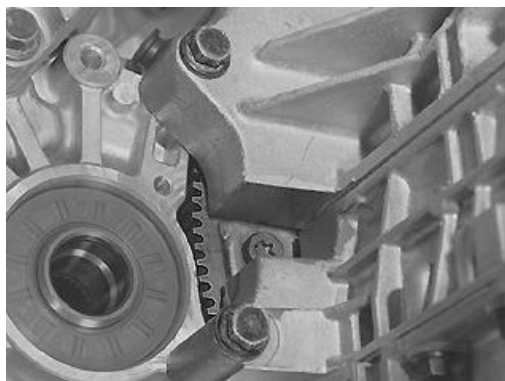
Raise the mobile jack into contact.



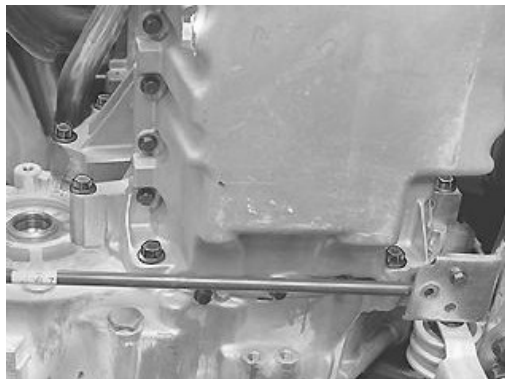
Removing the six screws for the torque converter

Remove the lower plastic nut. Bend out the right inner wing.

Turn the engine with a ratchet and socket. Use a Torx TX 50 socket on the torque converter screws (see the illustration).



Removing the 6 screws for the gearbox / engine

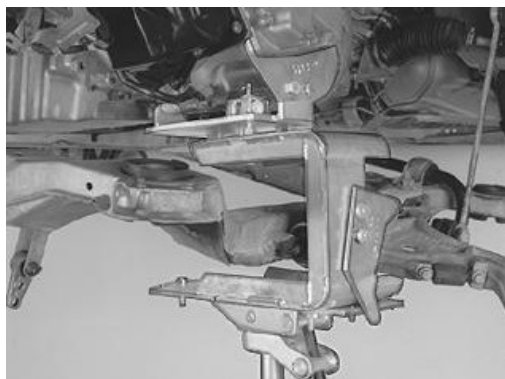


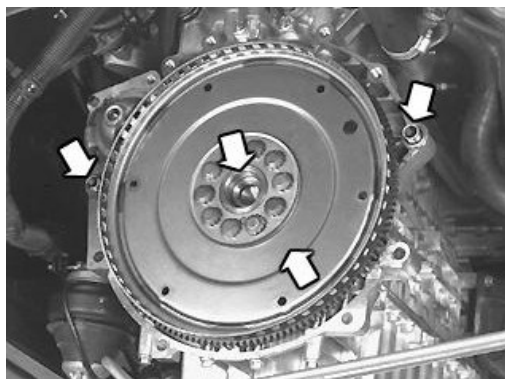
Removing the gearbox

Note! Lower the gearbox slightly when it is being removed so that it will pass the side member.

Ensure that the torque converter is removed with the gearbox and does not slide off the stator shaft. Use the hole in the torque converter cover to press the torque converter down.

Note! Do not pry toward the flange rim for the flywheel sensor.





Checking the carrier plate

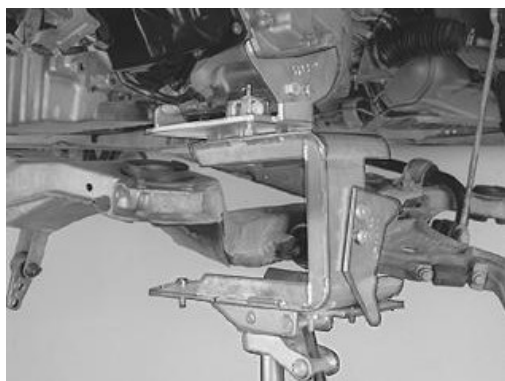
Check that the carrier plate is not damaged or cracked.

Check that:

- the mating surfaces between the gearbox and engine are clean. Check that the guide bushings are intact and in position
- the bushing for the torque converter in the crankshaft is fault free.

Installing the gearbox

Special tools: [951 2050](#) , [999 5045](#) , [999 5460](#) , [999 5563](#)



Installing the gearbox

Use the mobile jack and gearbox fixture to adjust the height and angle. Locate the gearbox on the engine.

Install the 6 screws. Tighten alternately to a light contact. Then tighten the screws alternately to 50 Nm.

Note! When tightening the screws, check carefully that the guide bushings locate correctly in their guide holes. Check that the torque converter cover is in contact with the engine before tightening.

Remove the fixture and the mobile jack from the gearbox.

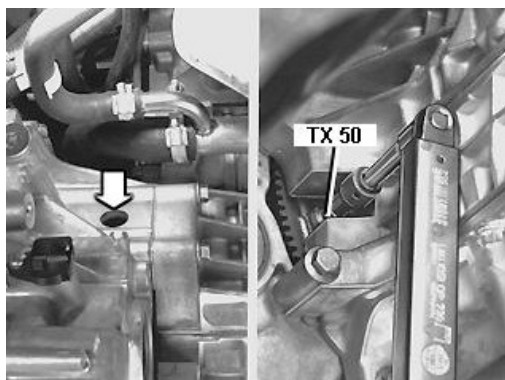
Installing the torque converter screws

Note! Use new screws, Torx TX50.

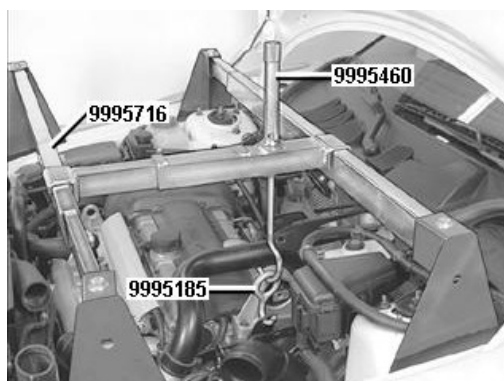
Align the torque converter with the carrier plate by turning the engine with the crankshaft pulley nut and turning the torque converter (accessible through the hole in the cover).

Install all 6 screws loosely. Tighten the screws until the heads are in contact with the carrier plate. Then tighten to 35 Nm. Socket Torx TX 50.

Note! Remove the socket wrench from the crankshaft.



Lifting the engine and gearbox



Screw up lifting hook [999 5460](#) .

Ensure that the dip stick pipe is free of the fan and that that no hoses or cables are crimped.

Installing the rear engine mounting on the gearbox

Install the mounting on the gearbox (3 screws).
Tighten to 50 Nm.



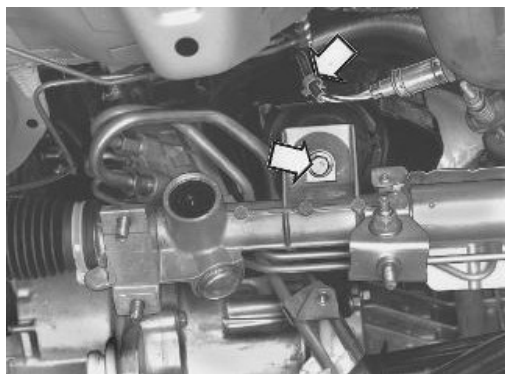
Installing the screw for the rear engine mounting

Install the screw in the engine pad. Tighten the screw to 50 Nm.

Remove the load relieving hook [999 5045](#) or the tie strap.

Install:

- the heated oxygen sensor (HO2S) cable on the cover with clamps
- the ground lead to the gearbox.

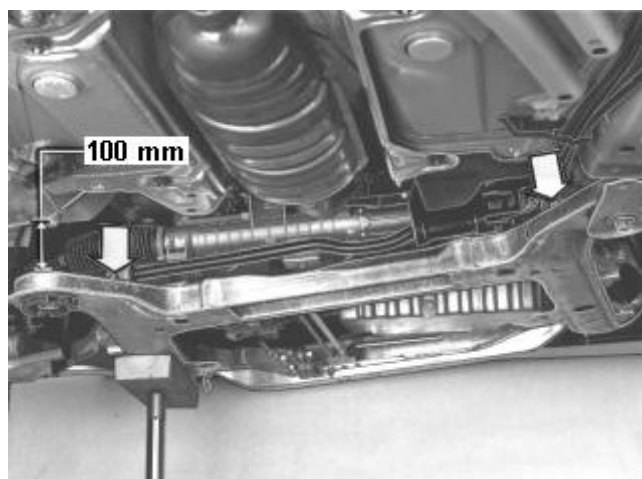


Right-hand drive cars only

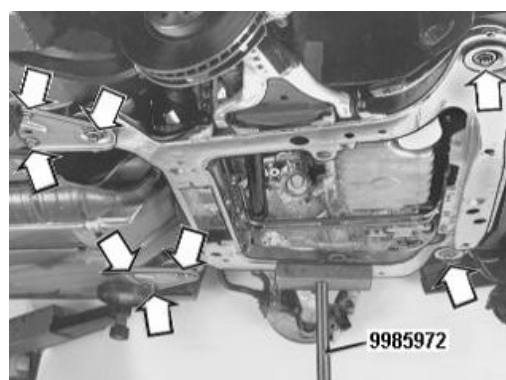
Remove the tape from the drive shaft and let the shaft rest on the oil pipe.

Raise the sub-frame so that it is approximately 100 mm from the body.

Locate the steering gear on right side and the crash guard in the sub-frame. Install the screws on the anti-roll bar left bearing cap. Tighten both bearing caps. Tighten



to 50 Nm.



Installing the sub-frame

Note! Use new screws (4 x M14). Lubricate the screw threads. Ensure that the steering gear screws are aligned in the frame!

Begin on the left-hand side. Raise the sub-frame with the mobile jack.

Install the screws for the frame and the support plate. First tighten the frame screws to 105 Nm + 120° and then the screws for the frame bracket to 50 Nm. Use bevel protractor [951 2050](#).



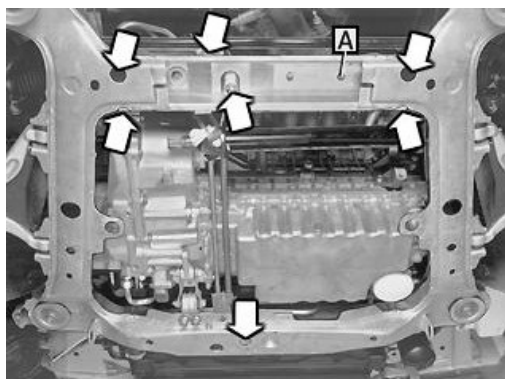
Installing the oil pipe on the gearbox

Use a new O-ring. Tighten to 10 Nm.

Installing the nuts and the screws on the steering gear and the front engine pad

Install:

- the 5 screws for the steering gear nuts. Use new nuts. Tighten to 50 Nm.
- the nut for the collision protection system / sub-frame (A). (Right-hand drive cars only). Tighten to 50 Nm
- the screw for the front engine mounting –



sub-frame.

Tighten the screws on the front and rear engine pads. Tighten to 50 Nm.

Installing the right drive shaft

Note! Ensure that the seal ring in the gearbox and the boot on the drive shaft are not damaged.

Install the bearing cap. Tighten to 25 Nm.

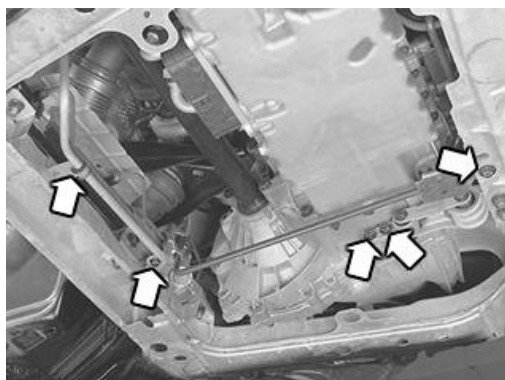


Installing the torque rod mounting in the gearbox

Note! Use new screws.

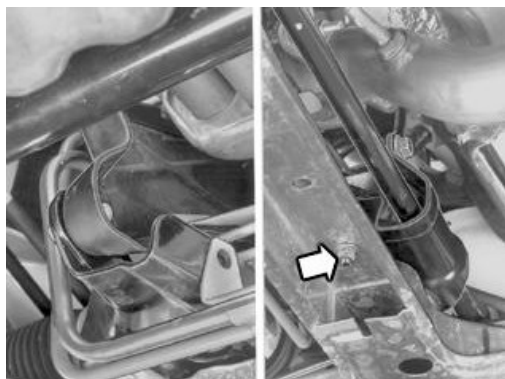
Tighten to 50 Nm.

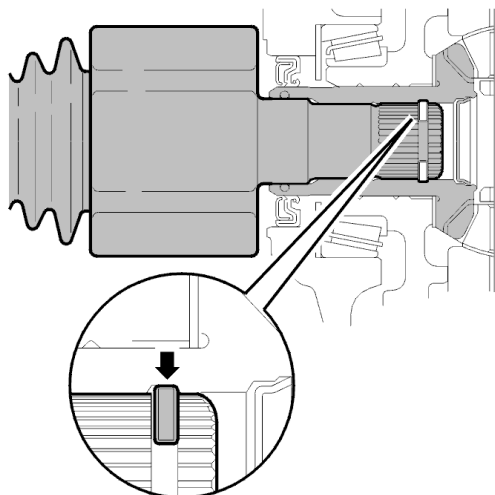
Install the screws in the brackets for the oil pipes. Tighten to 25 Nm.



Installing the collision protection system over the steering gear (right-hand drive cars only)

Tighten the two screws to 80 Nm.





Installing the left drive shaft

Ensure that the ABS sensor pulse wheel on the drive shaft is free of dirt.

Press in the drive shaft firmly so that the snap ring engages in its groove in the differential gear. Check by pulling carefully on the drive shaft constant velocity joint.

Note! Ensure that the seal ring in the gearbox and the boot on the drive shaft are not damaged.



Installing the drive shaft on the hub

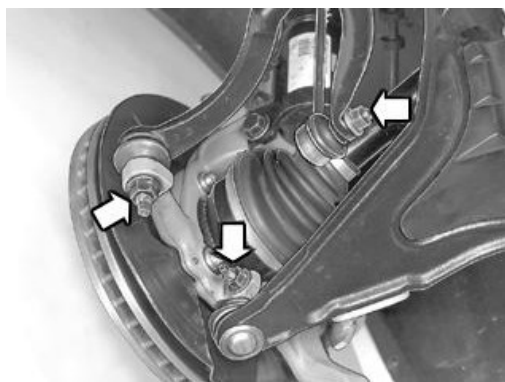
Use holder [999 5563](#) to hold the control arm down.

Bend out the spring strut. Align the drive shaft in the hub.

Install the drive shaft screw by hand. Use a new screw.

Remove the holder.

Note! Take care not to damage the drive shaft boot.



Installing the ball joint on the stub axle

Clean off any rust from the ball joint and stub axle.

Lubricate the ball joint pinion and the stub axle.

Install the ball joint in the stub axle.

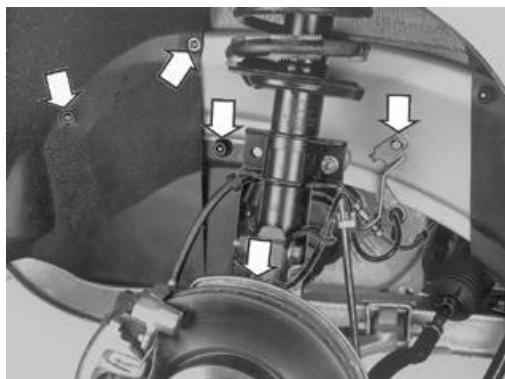
Note! Press the ball joint upwards so that the conical top is visible above the screwed joint on the stub axle.

Install:

- the screw for the ball-joint. Use a new nut. Tighten to 50 Nm
- the anti-roll bar link. Use a new nut. Tighten to 50 Nm
- the track rod with a new nut. Tighten to 70 Nm.

Tightening the left drive shaft screw

See [Installing the gearbox](#).



Installing front suspension components

Install:

- the bracket for the brake line / ABS cable (both sides)
- the ABS sensor in the stub axle. Clean the sensor with a soft brush.

Note! Ensure that the sensor seat is absolutely clean.

Tighten the sensor to 10 Nm.

Install the plastic nut (both sides).

Rivet the fender liner into place.

Installing components on the underside of the car

Install:

- the cable conduit on the sub-frame
- the carbon filter container. Clamp the hoses to the sub-frame with tie straps. Hook the hoses into place in the sub-frame
- the bracket and the screw for the ground lead.



Installing the front cover and the wheels

Install:

- the front cover. Press it into position at the front. Press it forward and upwards at the rear so that cover guide is seated in its slot. Install the screws
- the wheels. See [Tightening the wheel studs](#).

Lower the car

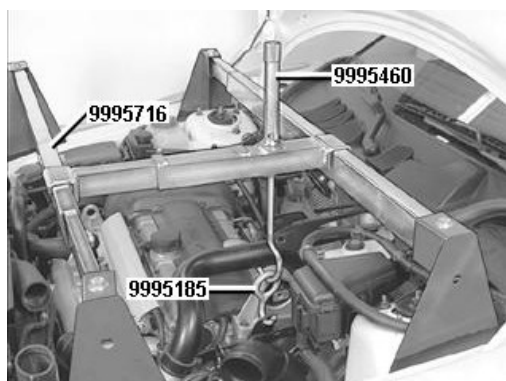


Removing the lifting hook and lifting beam

Remove:

- the lifting hook and the lifting beam
- the lifting fork from the engine.

Tighten the nut for the rear engine pad to 50 Nm.



Installing the screws between the gearbox / engine and the gearbox / starter motor



Install:

- the 3 screws for the gearbox / engine. Tighten to 50 Nm
- the 2 screws for the gearbox – starter motor. Tighten to 40 Nm
- the cable duct on the gearbox.

Installing the gearbox cable, mounting and oil pipe on the gearbox



Install:

- the gearbox cable on the lever and the screws for the bracket on the gearbox. Tighten to 25 Nm
- the large connector
- the 2 nuts for the cable conduit on the gearbox
- the connector at the cable conduit furthest in at the gearbox
- the oil pipe on the gearbox. Tighten to 25 Nm.

Installing the screw for the torque control arm / torque rod at the engine

Tighten to 35 Nm +90°.

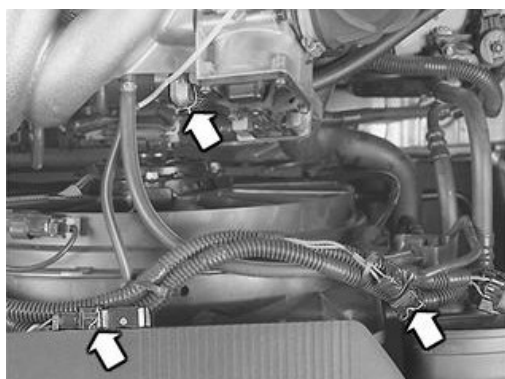
Install the ground strip on the firewall. Tighten to 10 Nm.



Installing the connectors and vacuum hose

Install:

- the connector under the panel
- the connector on the fan shroud
- the vacuum hose on the intake manifold.



Installing engine compartment components

See [Sealing ring, gear shift linkage rod, replacing](#)

Finishing

Checking gearbox fluid level

See [Checking the oil level](#) .

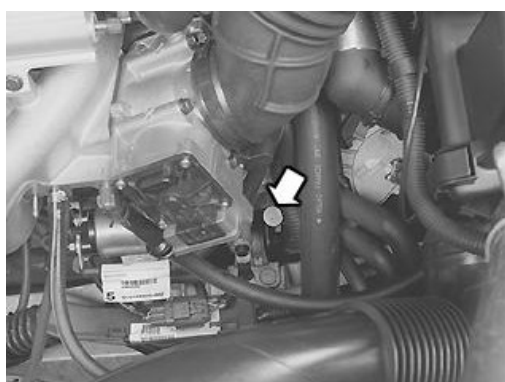
Note! If the gearbox is replaced with a new or exchange gearbox, it is supplied filled with oil plus a certain amount of “excess”. This is to compensate for loss from the oil cooler. The oil level must always be checked however.

Warning! The lower engine coolant hose positioned by the dip stick is extremely hot. Use protective gloves when moving the hose to the side.

Test drive the car

Use the test driving schedule, see [Test Drive Form, description](#) .

Note! After replacing the gearbox, the gearbox adaptation and the “Gearbox oil change” counters must be reset. See [Resetting the adaptation](#) .



Replacing the gearbox cable



Preparations for replacing the cable

Park the car on a level surface. Do not apply the parking brake.

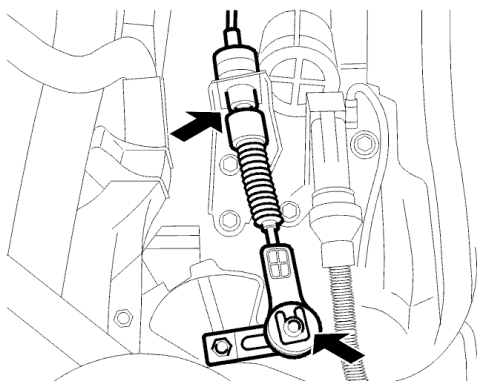
Remove:

- the air cleaner (ACL) housing
- the battery
- the battery shelf.

Remove the gearbox cable from the bracket and from the lever at the gearbox

Disconnect the catch at the lever.

Remove the cable from the bracket.



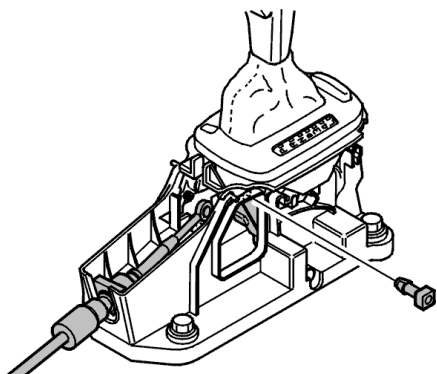
Removing the centre console

See [Replacing the center console](#) .

Removing the cable from the gear selector assembly

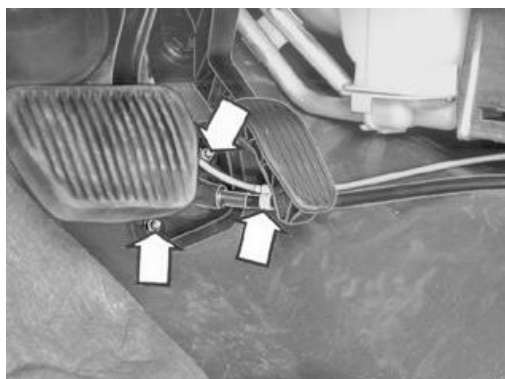
Remove:

- the shaft from the cable and the lever. Use round-nose pliers. Pull the shaft straight out
- the cable from the gear selector assembly.



Removing the gearbox cable

Fold the carpet down. Remove the side panel. Remove the screws for the cable grommet in the cowl-panel.



Remove the ignition switch interlock cable from the gearbox cable.

Installing the gearbox cable

Note! Take care not to damage the cable or sleeve by bending it excessively. Take care not to damage the cable boot.

Route the cable correctly in the engine compartment with someone to assist you.

Align the cable in the gear selector assembly.

Install:

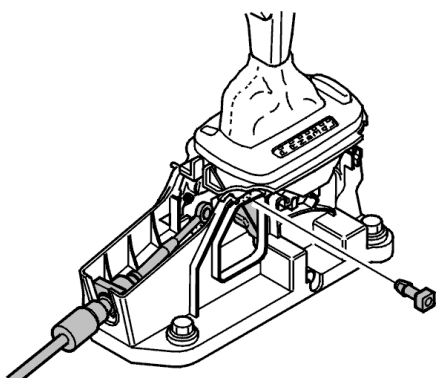
- the cable grommet in the cowl panel. Tighten to 6 Nm
- the ignition switch interlock cable on the gearbox cable
- the side panel

Fold the carpet back.

Installing the cable on the gear selector assembly

Install:

- the cable sleeve in the gear selector assembly
- the cable on gear lever arm with the shaft.



Installing the centre console

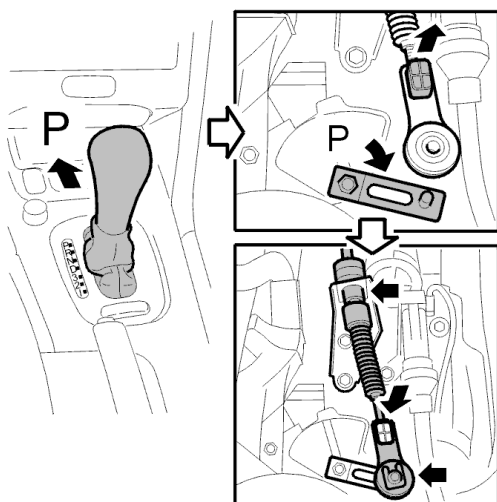
See [Replacing the center console](#) .

Installing the gearbox cable on the gearbox

Move the gear selector to position P.

Turn the lever on the gearbox to position P (the foremost position).

Check that P position is engaged: Try to roll the



car.

Detach the lock tab on the cable. Pull it straight up slightly. Use flat nosed pliers.

Install the cable in the bracket and on the lever on the gearbox. Fold the locking down.

Press the locking tab into place on the cable.

Check the gear positions.



Installing engine compartment components

Install:

- the air cleaner (ACL) housing
- the battery shelf
- the battery. Connect the wiring.

Changing oil

Note! Oil grade: Only ATF oil, Volvo P/N 1161540-8 (1 liter containers) may be used.

Warning! Avoid skin contact with gearbox fluid.

Conditions for changing

The oil should be replaced only in the two following instances:

Where diagnostic trouble codes (DTCs) TCM 0042 and TCM 0046 are stored, in which case the diagnostic function activates the warning lamp in the following circumstances.

The gearbox control module (TCM) receives data about the operating temperature of the gearbox fluid while the car is being driven. TCM 0042 is stored after an accumulated amount of time.

Diagnostic trouble code (DTC) TCM 0046 is stored if the gearbox fluid temperature exceeds 150° C for more than two minutes.

For cars in continuous taxi service and cars used to tow trailers extensively, oil should be changed at 75,000 km $\pm$ 5,000 km service intervals. This is to conform to the regular service program.

Warning! The oil may be very hot if the car has just been driven. Avoid skin contact.

Draining

Remove:

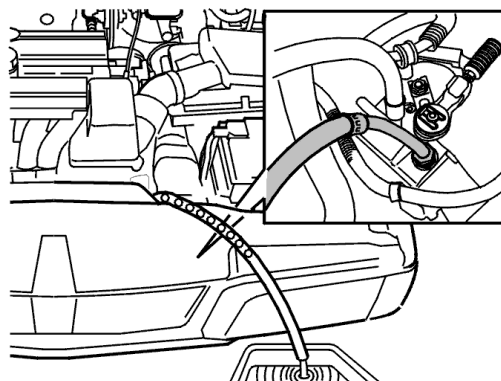
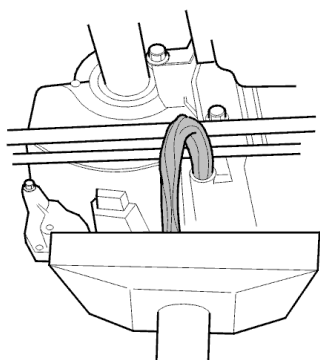
- the splash guard under engine (certain versions)
- the oil plug. Drain the gearbox oil.

Installing the oil plug

Use a new gasket.

Tighten the plug to 40 Nm.

Install splash guard (certain variants).



Preparing to flush the gearbox

Remove the battery and the battery shelf.

Remove the return hose on the control system cover.

Install a plastic plug in the connection on the cover.

Install a transparent plastic hose on the oil return hose connection.

Place a container beneath the hose to catch the oil.

Temporarily reinstall the battery shelf and the battery.

Filling with oil

Apply the parking brake. Move the gear selector lever to position P.

Fill with approximately 2 litres of oil.

Start the engine and let it idle.

Turn the engine off when air bubbles start to become visible in the hose.

Fill with approximately 2 litres of oil.

Start the engine again and let it idle.

Turn the engine off when air bubbles start to become visible in the hose.

Remove the battery and the battery shelf.

Remove the hose from the connection.

Install the return hose on gearbox cover. Install

the battery shelf and the battery.

Further filling

Fill with approximately 2 litres of oil.

Apply the parking brake.

Start the engine and let it idle. Move the gear selector through all the gear positions. Wait 4–5 seconds in each gear.

Checking the oil level

See [Checking the oil level](#) .

The capacity of the gearbox is 7.1 ± 0.1 litres. (MAX, MIN).

Note! After replacing the gearbox, the adaptation and the “Gearbox oil change” counter must be reset. See [Resetting Gearbox fluid change counter](#) .

Sealing ring, gear shift linkage rod, replacing

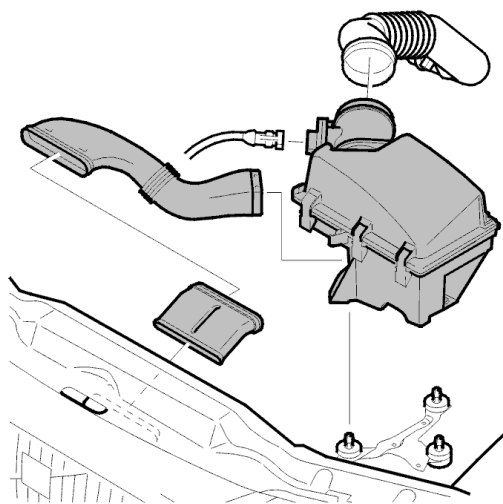
Special tools: [999 5476](#)

Note! As the illustrations in this service information are used for different model years and / or models, some variation may occur. However, the essential information is always correct.

Removing engine compartment components

Ignition off.

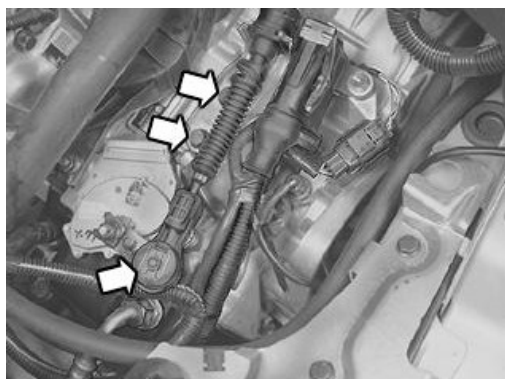
Remove the air cleaner housing ACL assembly with the intake pipe. Pull the air cleaner (ACL) housing out of its mountings.



Removing the gear selector cable

Remove:

- the screws from the bracket for the gear selector cable
- the cable from the lever. Move the cable to



one side.

Removing the gear-shift position sensor from the gear shift linkage rod

Remove:

- the lever
- the nut, lock washer and rubber seal from the gear-shift position sensor
- the nut for the cable duct. Lift the cable duct to one side
- the two screws for the gear-shift position sensor.

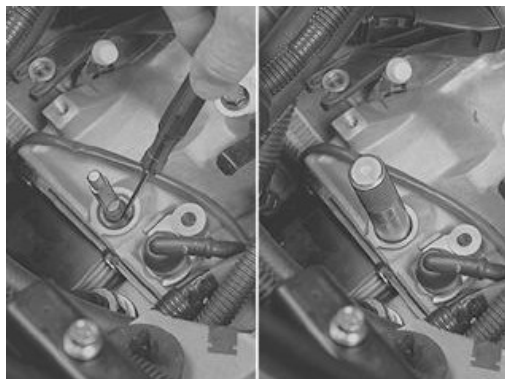
Carefully lift the sensor off the gear shift linkage rod.

Replacing the sealing ring for the gear shift linkage rod

Remove the old sealing ring. Use a small rounded off screwdriver.

Take care not to damage the rod.

Smear a little automatic gearbox fluid on the new sealing ring. Install the ring. Use drift [999 5476](#).



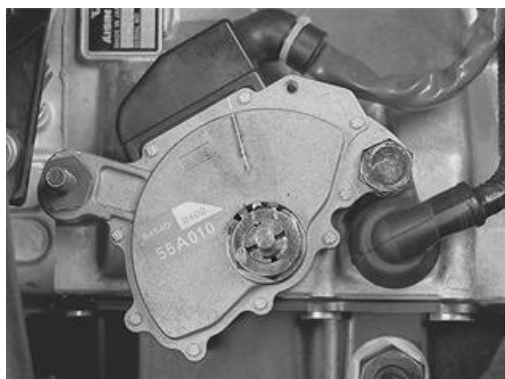
Installing the gear-shift position sensor

Tighten the sensor screws lightly.

Install the rubber washer, lock washer and the nut on the gear shift linkage rod connection.

Tighten the nut.

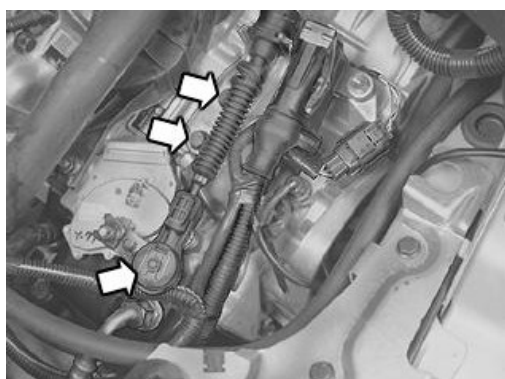
Lock the nut with the lock washer.



Adjusting the gear-shift position sensor

See [Checking and adjusting the gear-shift position sensor](#)

Installing the gear-shift position sensor, continued

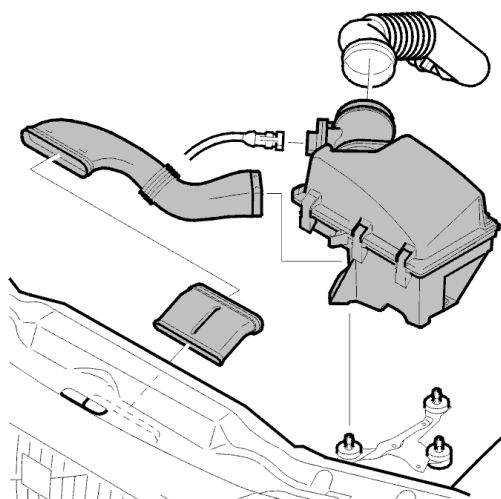


Install:

- the cable duct on the stud on the gear-shift position sensor. Tighten the nut. Tighten to 25 Nm
- the lever on the gear shift linkage rod. Tighten to 16 Nm
- the gearbox cable on the lever on the bracket for the cable on the gearbox. Tighten to 25 Nm.

Installing engine compartment components

Install the air cleaner (ACL) housing, including all hoses and electrical terminals.



Checking diagnostic trouble codes (DTCs)

Check and erase any diagnostic trouble codes (DTCs).

Replacement of control system wiring harness with oil temperature sensor

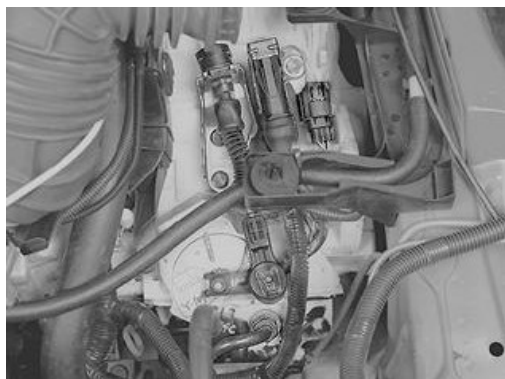
Special tools: [998 5972](#) , [999 5185](#) , [999 5460](#) , [999 5477](#) , [999 5562](#) , [999 5563](#) , [999 5716](#) , [999 5972](#)

Note! Since the same illustrations are used for different model years and/or model variants, certain discrepancies may occur. The most important information will always correspond to the model concerned, however.

Removing engine bay parts

See [Sealing ring, gear shift linkage rod, replacing](#) .

Detach the gear-change cable from the lever on the gearbox and the two cable bracket screws.

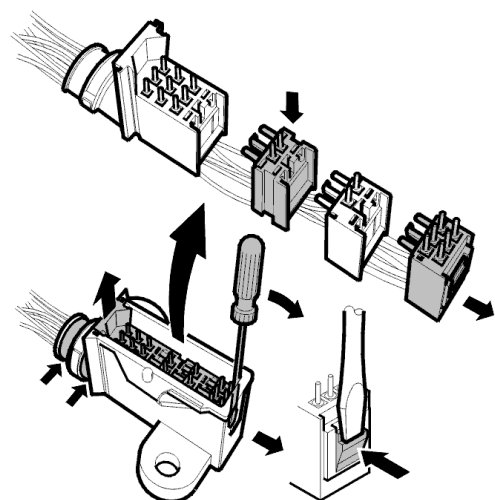


Move the cable aside.

Unplug the connector from the gearbox.
Undo the cable tie holding the wiring harness leads together.
Separate the connector halves.

Dismantling the large connector

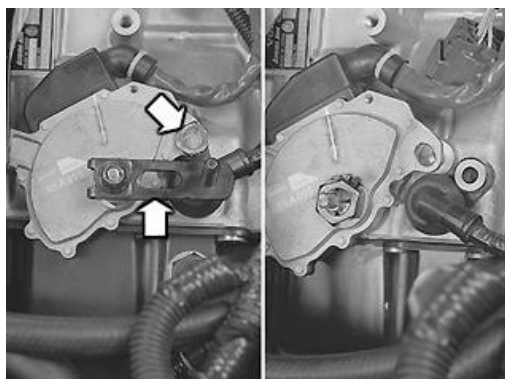
Remove the sockets for the leads.
Remove the oil temperature sensor and the parts of the solenoids in the connector.



Removing the lever on the control shaft

Remove:

- the lever on the control shaft
- the screw for the gear selector position



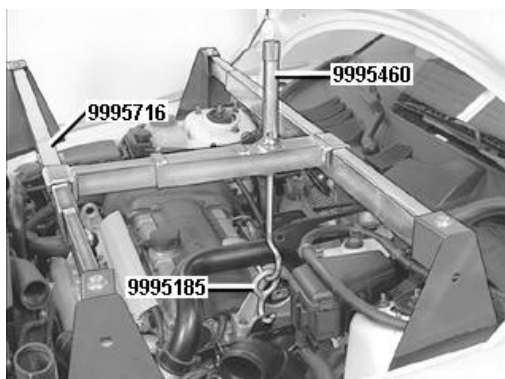
sensor/wiring harness.

Bend out the lug on the wiring harness retainer.

Fitting lifting yokes and hooks

Position lifting yoke [999 5716](#) directly over the engine's lifting eye. Arrange the lifting yoke brackets as shown in the illustration.

Attach hooks [999 5460](#) and [999 5185](#) to the lifting eye at the rear of the engine. Take up the slack in the hooks and tension them to relieve the pressure on the engine pads.



Raising the car

Note! Position the front lifting arms so that they do not block the subframe's support plates.

Remove:

- LH front wheel
- front protective cover.



Removing the screws securing the cable conduit and earth lead's bracket on the subframe

Remove the carbon filter canister from the subframe.

Unhook the hoses from their brackets.



Removing the link arm's ball joint from the stub axle on the left-hand side.



Use compressed air to blow the area round the ball joint clean.

Spray rust dissolvent generously on the ball joint and the nut and bolt securing it.

Preparations for removing the ball joint

If the bolt is rusted in, slacken the nut a few turns. Then tap the bolt loose.

Remove the nut and bolt.

Spray rust remover on the ball joint once again.

Note! Do not drive a chisel, screwdriver or drift between the "ears" on the stub axle.



Removing the ball joint from the stub axle

Tap the ball joint free. Use a socket between hammer and ball joint.

Note! The inside diameter of the socket must be larger than the outside diameter of the cover to avoid damaging the cover.

Spray rust dissolvent on the ball joint once again.



Removing the ball joint/link arm from the stub axle

Move the ball joint up and down by hand (or use a pry bar) until it comes loose from the stub axle.

Fit protective sleeve [999 5562](#) on the ball joint.

Fit retainer [999 5563](#) on the link arm when the ball joint has been removed.

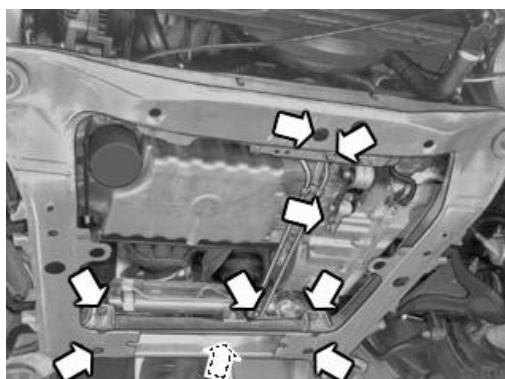
Remove the nut from the anti-roll bar link on the LH side. Unhook the link from the anti-roll bar.



Removing components from the subframe

Remove:

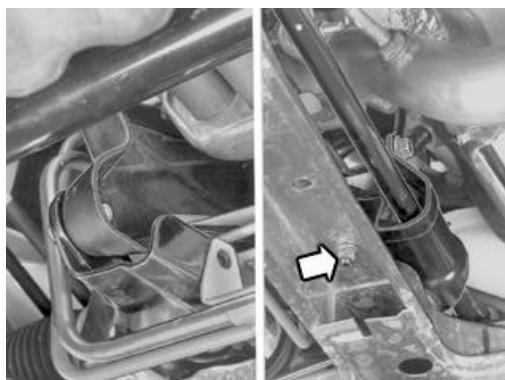
- the steering gear nuts
- the screws securing the oil pipe brackets
- the bolt from the front engine cushion/subframe
- the torque rod attachment bolts in the gearbox



Removing on RHD cars only

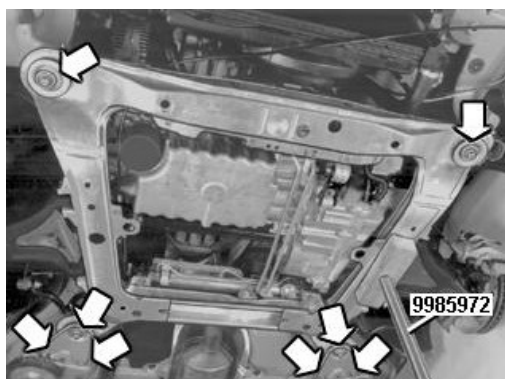
Remove:

- the collision guard over the steering gear
- the nut for the collision guard/subframe.

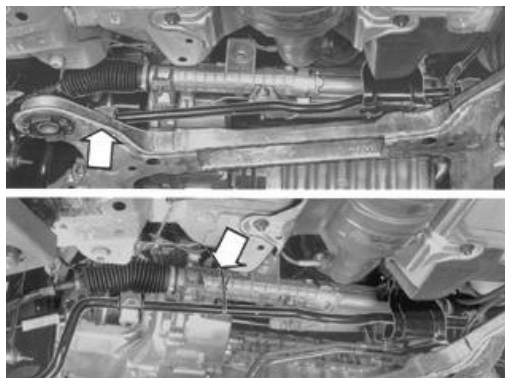


Preparations for lowering the subframe

Detach the subframe from the car.
Position engine lift [998 5972](#) under the LH side of the subframe. Abut it lightly against the subframe.
Remove the bolts from the subframe support plate on both sides.
Undo the subframe bolts on the RH side.
Unscrew the bolts until at least five turns still hold them in place.



RHD cars only: Lower the subframe about 100



mm.

Make sure that the five steering gear bolts and the collision guard bolt are unscrewed from the subframe.

Remove the anti-roll bar's clamp bolts (LH side). Undo the bolts on the RH side until only a few turns still hold them in place.

Tie the anti-roll bar to the steering gear as shown in the illustration.

Lowering the subframe

Note! Make sure that the steering gear and collision guard come away from the subframe.

Lower the subframe to expose the control system casing.



Drain the oil from the gearbox.

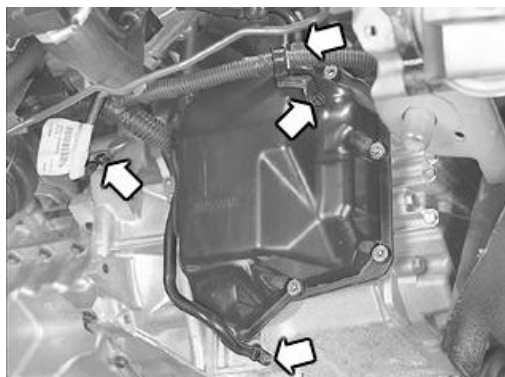
Place a receptacle under the gearbox. Drain the oil. Measure the amount of oil and make a note of it. Then tighten the plug to 40 Nm.

Remove the clamp for the wiring harness on the control system casing. Detach the earth cable from the gearbox. Secure the wiring harness and earth cable.

Detach the oil cooler's return line from the control system casing.

Detach the oil cooler's pipe/hose from the gearbox. Move the pipe aside.

Seal the hole in the gearbox with a plastic plug. Bend the oil temperature sensor lead aside.



Removing the control system casing

Remove the screws securing the control system casing (Torx TX40).

Clean the threads, removing all traces of sealant. Use an M8 x 1.25 thread tap.

Remove the casing. Use gasket wedge [999 5477](#) . Carefully tap it in between casing and



gearbox, making sure that the casing's sealing flange is not skewed.

Remove all gasket remnants from casing and gearbox.

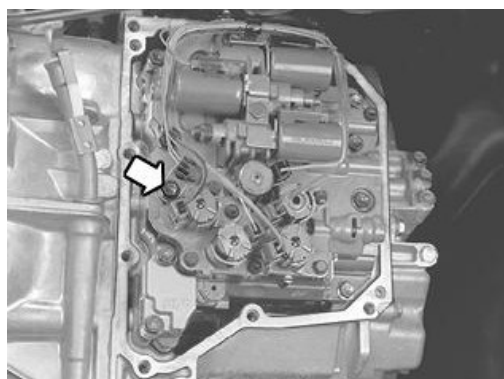
Note! Exercise care so that no gasket remnants fall into the gearbox. Thoroughly clean the casing.

Removing the wiring harness

Remove:

- the solenoid valve connectors
- the screws securing the retainer for the oil temperature sensor. Remove the sensor from the control system
- the wiring harness from the retainer on the control system.

Remove the wiring harness.



Connect the wiring harness

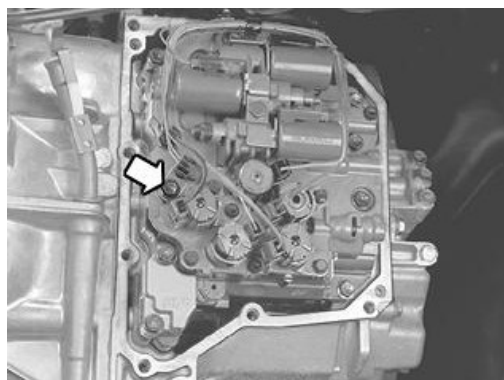
Plug the wiring harness connectors into the solenoids.

Lubricate the O-rings for the wiring harness lead-through and the oil temperature sensor with ATF oil.

Fit the wiring harness. Plug the connectors into the solenoids.

Fit the oil temperature sensor with retainer and screw. Tighten to 10 Nm.

Fit the wiring harness to the retainer. Check that the wiring harness is correctly positioned.



Assembling the control system

Sealing the casing

Check that the casing's mating surface is clean and flat.

Wipe off the cleaned sealing surfaces on casing and gearbox with methylated spirits.

Note! Take care to ensure that no impurities or foreign objects get into the gearbox.

Apply a bead of sealant about 3 mm thick on



the casing. Part number 1161409-6. Also apply sealant round the screw holes.

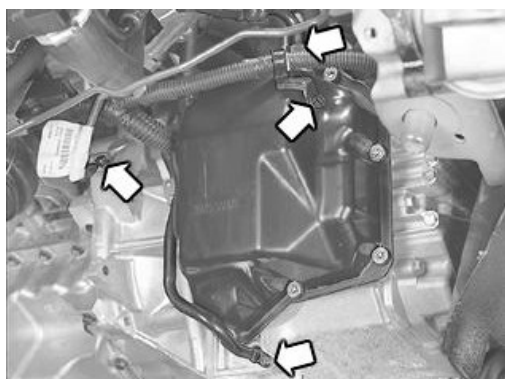
Fitting the control system casing

Fit the control system casing on the gearbox. Tighten the bolts alternately to 12 Nm. Torx TX 40.

Run the lead to the oil temperature sensor.

Fit:

- the oil pipe to the gearbox using a new O-ring
- the return line to the control system casing
- the wiring harness to the retainer on the casing
- the earth cable to the gearbox.

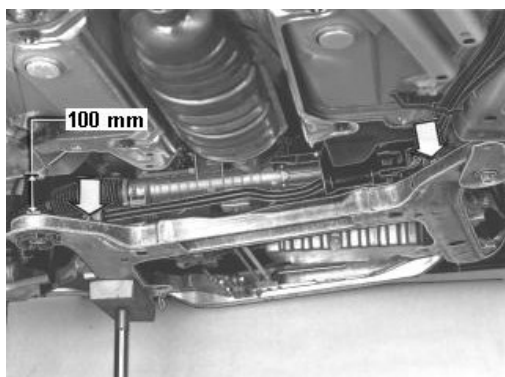


Fitting the subframe and front suspension components

Fitting on RHD cars

Raises the subframe to about 100 mm from the bodywork.

Fit the steering gear on the RH side and the collision guard in the subframe. Insert the bolts for the anti-roll bar's LH bearing with clamps. Tighten the two clamps to 50 Nm.

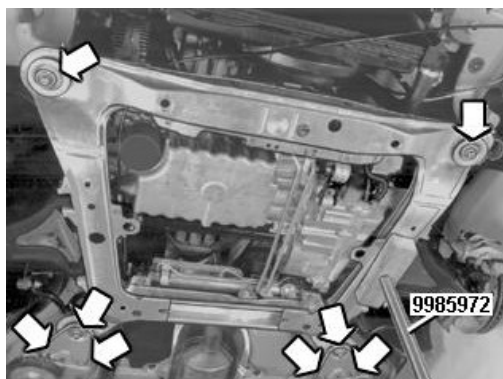


Fitting the subframe

Position engine lift [998 5972](#) under the LH side of the subframe.

Press the subframe up against the bodywork, fitting the steering gear bolts into the subframe at the same time.

Fit new bolts (M14) in the subframe. Oil the threads. Tighten the bolts to 105 Nm. Fit the



support plate bolts at the same time.

RH side

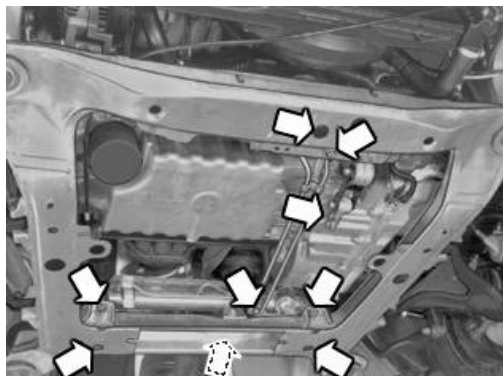
Press up the subframe. Remove the old bolts and fit new ones in the same way as on the LH side. Remove the engine lift.

Finally, tighten the four subframe bolts to 120°. Tighten the support plate bolts to 50 Nm.

Fitting steering gear/subframe components

Fit:

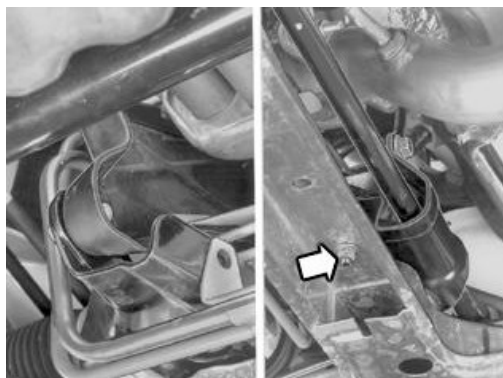
- new locknuts and the steering gear bolt. Tighten to 50 Nm
- the front engine pad retaining bolt. Tighten to 50 Nm
- new torque rod attachment bolts. Tighten to 35 Nm + 40°
- the servo oil pipe retaining bolts.



Fitting the collision guard over the steering gear (RHD cars only)

Tighten the two bolts to 80 Nm.

Fit a new collision guard/subframe locknut. Tighten to 50 Nm.



Fitting the ball joint to the stub axle

Clean the ball joint and stub axle, removing all rust.

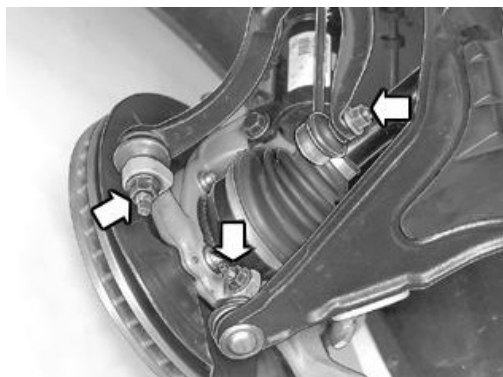
Lubricate the ball joint stud and stub axle.

Fit the ball joint in the stub axle.

Note! Press the ball joint up until the tapered top is visible above the bolted joint on the stub axle.

Fit:

- the ball joint bolt. Use a new nut. Tighten to 50 Nm
- the anti-roll bar link. Use a new nut. Tighten



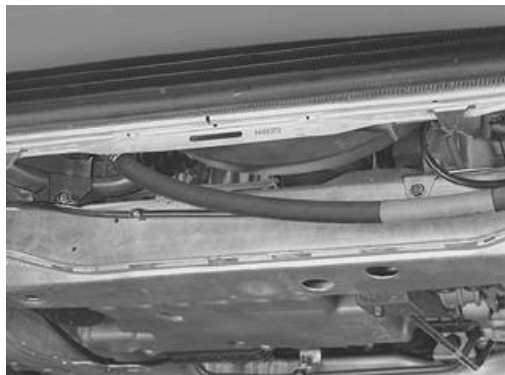
to 50 Nm

- tie rod with a new nut. Tighten to 70 Nm.

Fitting subframe components

Fit:

- the cable conduit on the subframe
- the carbon filter canister. Clamp the hoses on the subframe with cable ties. Hook the hoses on the subframe.
- the bracket and bolt for the earth cable.



Fitting the front casing and wheels

Fit:

- the front casing. Press the front edge into position. Press it forwards. Press the rear edge upwards so that the casing guide enters its groove. Fit the screws.
- the wheel. See [Tightening the wheel studs](#).

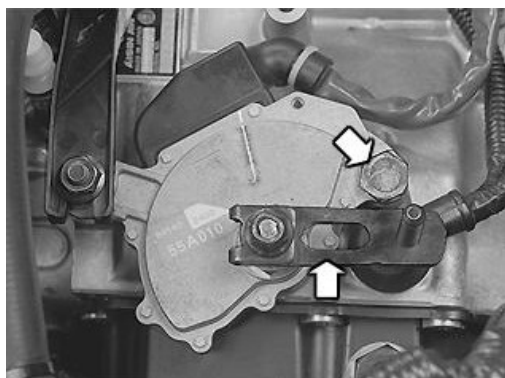


Lower the car to the floor

Removing lifting yokes and lifting hook

Bend in the lug on the wiring harness retainer. Fit the bolt for the selector lever position sensor/retainer. Tighten it to 25Nm.

Fit the control shaft lever. Tighten the nut to 16 Nm.



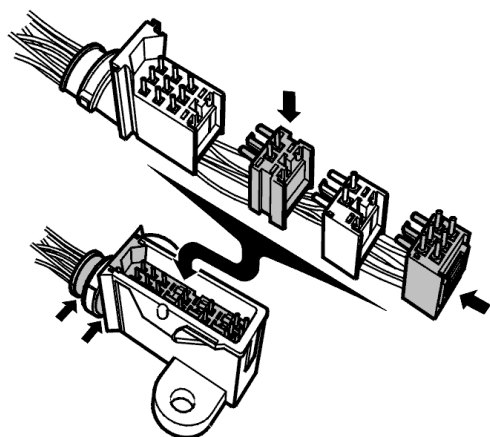
Assembling connectors

Fit the socket for the oil temperature sensor together with the other sockets.

Fit the sockets in the shell.

Fit the rubber seal in place.

Fit cable ties round the cable harnesses and the rubber seal.



Fitting connector and cabling

Fit:

- the connector to the gearbox and the bracket with the connector. Tighten to 25 Nm
- gearbox cabling to the connectors

Fit the gear selector cable with bracket. Tighten to 25 Nm. Connect the cable to the lever.



Fitting engine bay components

Fit:

- the battery tray
- the air filter housing and inlet pipe
- the battery.

Fill with fresh oil, part number 1161540-8, using the same amount as noted earlier, see [Drain the oil from the gearbox.](#) .

Top up and check the level. See [Checking the oil level](#) .

Note! When changing the gearbox oil, the "Gearbox oil, change" counter should be reset to zero. Use VIDA Bilkommunikation to reset the counter.

Solenoids/control system, changing

Changing/checking solenoids

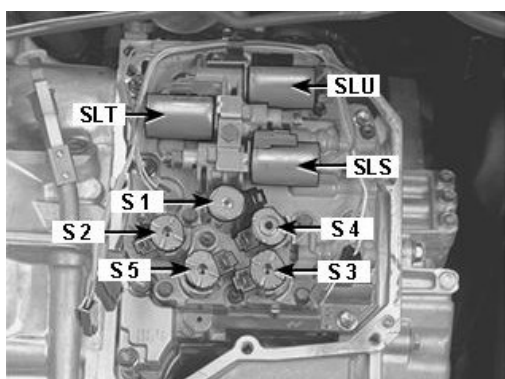
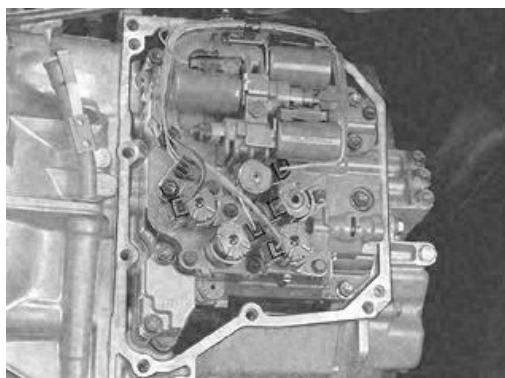
Preparation

Note! The steps regarding the wiring harness and connections, and mountings for the

solenoids/control system should not be performed if changing the solenoids or control system.

Remove, see [Replacement of control system wiring harness with oil temperature sensor](#) .

Unplug the solenoid connectors.



Checking the resistance of S1-S5

Note! Measurements should be taken at approx. 20°C.

Solenoid S1

Measure between the pin in the solenoid connector and the gearbox grounding point.
Correct value: 12-16 Ω.

Solenoid S2-S5

Measure between the pin in the solenoid connector and the gearbox grounding point.
Correct value: 11-15 Ω.

If the value for any of the solenoids S1-S5 is incorrect

Change the solenoid as described in [Changing solenoids S1-S5](#) .

Checking the resistance of SLT, SLS and SLU

Note! Measurements should be taken at approx. 20°C.

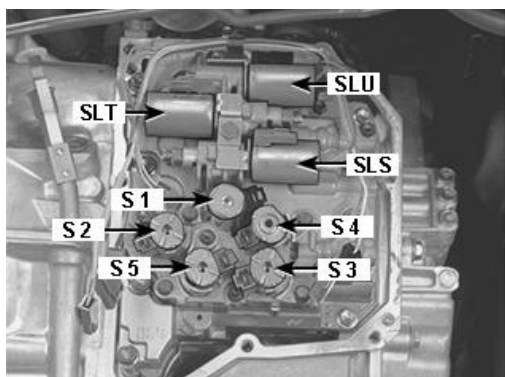
Solenoid SLT, SLS and SLU

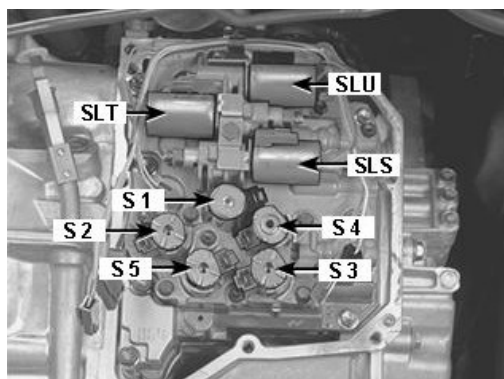
Measure between the two pins in the solenoid connector.
Correct value: 5.0-5.6 Ω.

If the value for any of the solenoids SLT, SLS or SLU is incorrect

Change the control system as described in [Changing the control system](#) .

The control system is calibrated together with the solenoids.



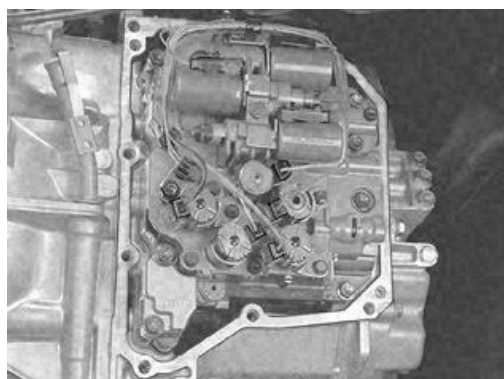


Changing solenoids S1-S5

Remove the solenoid bolt and remove the solenoid from the control system.

Oil the O-ring of the new solenoid with ATF.

Fit the solenoid. Tighten the bolt to 7 Nm.



Supplementary work

Plug in the solenoid connectors.

Refit as described in [Replacement of control system wiring harness with oil temperature sensor](#) and [Replacement of control system wiring harness with oil temperature sensor](#).

Changing the control system

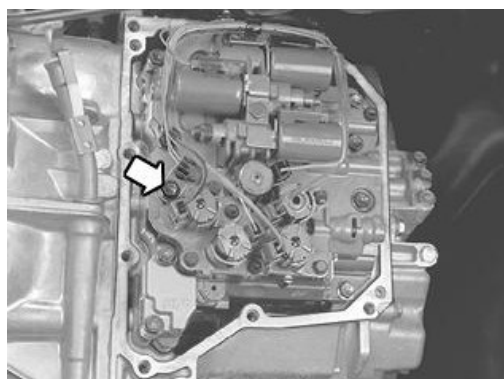
Preparation

Remove, see [Replacement of control system wiring harness with oil temperature sensor](#).

Remove:

- solenoid valve connectors
- bolt for oil temperature sensor holder. Detach the sensor from the control system
- wiring harness from holder on control system.

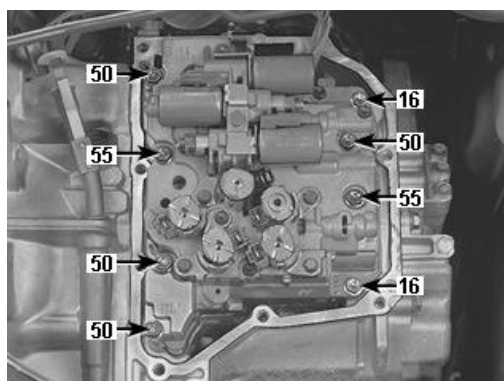
Bend aside the wiring harness.



Removing the control system

Remove the bolts securing the control system and remove the cover from the gearbox.

Note! Make sure that no ruptures appear on the top side of the gear selector valve lever.



Changing the sealing rings

Remove the sealing rings from the gearbox.

Note! Be careful to make sure that no remains enter the gearbox.

Fit new sealing rings in the gearbox.
Hold seals in place with vaseline.



Checking the gear selector valve

Check that the gear selector valve lever is correctly positioned.



Fitting the control system

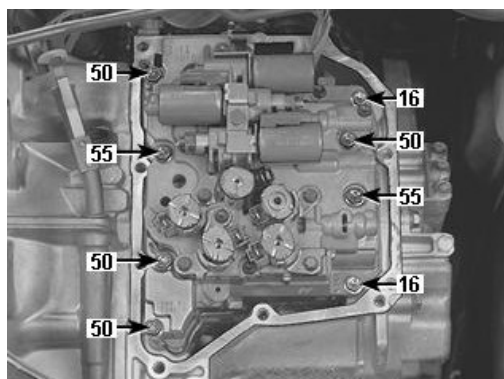
Note! Make sure that the gear selector lever is in N.

Fit the control system lever to the gear selector lever.

Fit:

- control system bolts
 - a new gasket for the control system cover.
- Note that the bolts are of different lengths (dimensions in mm)

Tighten the bolts alternately until loosely



tightened. Then tighten alternately to 10 Nm.

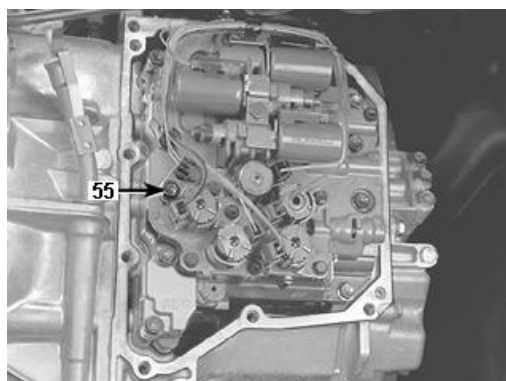
Supplementary work

Fit the wiring harness. Plug in the solenoid connectors.

Fit the oil temperature sensor, securing it with the bolt. Note that the bolt length is in (mm). Tighten to 10 Nm.

Attach the wiring harness to the holder. Check that the wiring harness is correctly positioned.

Refit as described in [Replacement of control system wiring harness with oil temperature sensor](#) and [Replacement of control system wiring harness with oil temperature sensor](#).



Replacing the gear-shift position sensor

Note! As the illustrations in this service information are used for different model years and / or models, some variation may occur. However, the essential information is always correct.

Replacing the gear-shift position sensor

Replacing the gear-shift position sensor V70 - 2000 and S80

Replacing the gear-shift position sensor V70 - 2000, see [Replacing the gear-shift position sensor V70 -2000](#).

Replacing the gear-shift position sensor S80, see [Replacing the gear-shift position sensor S80](#).

Replacing the gear-shift position sensor V70 -2000

Removing engine compartment components

Ignition off.

Remove:

- the air cleaner (ACL) housing and the intake manifold
- the battery
- the battery shelf.



Removing the gearbox cable

See [Checking and adjusting the gear-shift position sensor](#) .

Removing the gear-shift position sensor

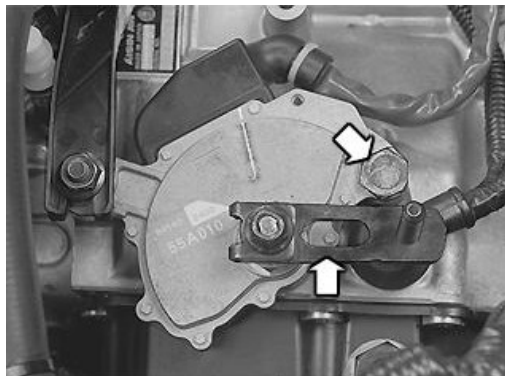
Remove:

- the lever
- the nut, lock washer and rubber seal from the gear-shift position sensor.

Remove the nut for the cable duct. Lift the cable duct to one side.

Remove the two screws from the gear position sensor.

Carefully lift the sensor off the gear shift linkage rod.



Removing the connector from the gearbox

See [Temperature sensor, gearbox fluid, replacing](#) .

Disassembling the connector on the gearbox

Separate the cable clamps. Disconnect the connector from the gearbox.

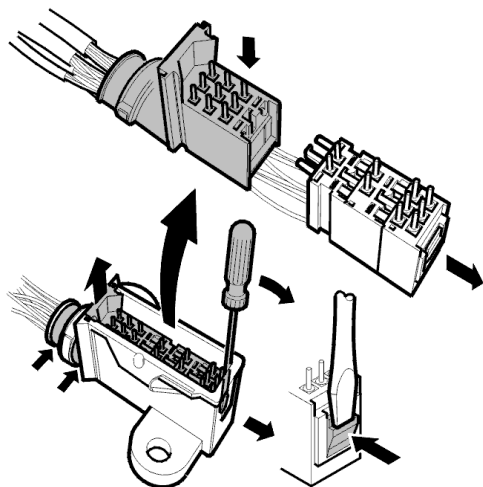
Remove the sockets from the connector casing.

Remove the rubber seal from the connector.

Insert a screwdriver between the casing and socket. Press in the catch. At the same time, slide the sockets out of the casing.

Detach the base for the gear-shift position sensor (9-pin) from other bases.

Remove the gear position sensor.



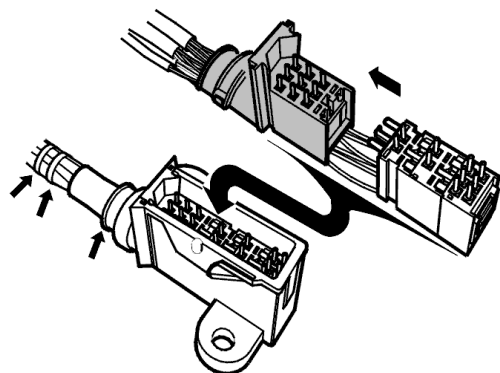
Assembling the connector

Reassemble the socket for the gear-shift position sensor with the other sockets.

Install the bases in the casing.

Install the rubber seal in position.

Install the cable clamps around the cable harness and the rubber seal.

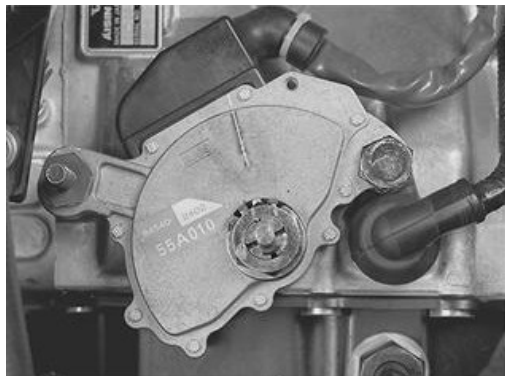


Installing the connector on the gearbox

See [Temperature sensor, gearbox fluid, replacing](#) .

Installing the gear-shift position sensor

Tighten the sensor screws lightly.
Install the rubber washer, lock washer and the nut on the gear shift linkage rod connection.
Tighten the nut.
Lock the nut with the lock washer.



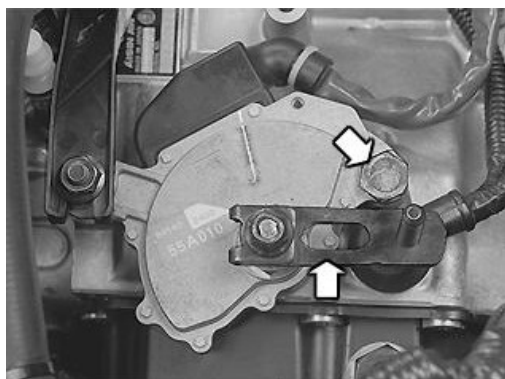
Adjusting the gear-shift position sensor

See [Checking and adjusting the gear-shift position sensor](#) .

Installing the gear-shift position sensor, continued

Install:

- the cable duct on the screw. Tighten the nut.
Tighten to 25 Nm
- the lever on the gear shift linkage rod.
Tighten to 16 Nm.



Installing the gear selector cable

See [Checking and adjusting the gear-shift position sensor](#) .

Installing engine compartment components

Install:

- the battery shelf
- the air cleaner (ACL) housing and the intake manifold
- the battery.



Checking diagnostic trouble codes (DTCs)

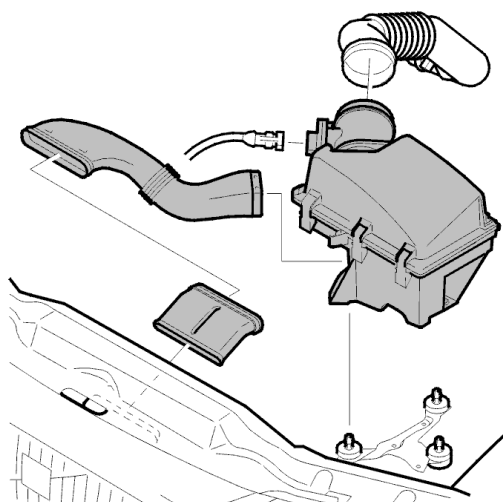
Check and erase any diagnostic trouble codes (DTCs).

Replacing the gear-shift position sensor S80

Removing engine compartment components

Ignition off.

Remove the air cleaner housing (ACL) assembly with the intake pipe.



Removing the gearbox cable

See [Gear selector cables, replacing](#) .

Removing the gear-shift position sensor

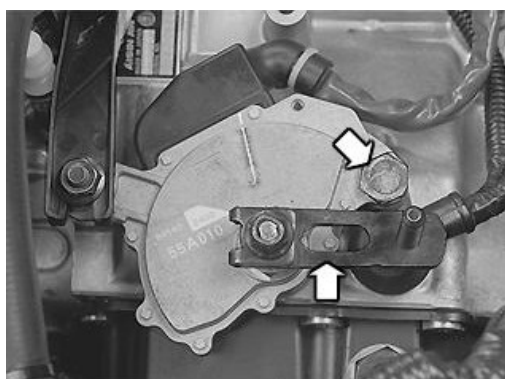
Remove:

- the lever
- the nut, lock washer and rubber seal from the gear-shift position sensor.

Remove the nut for the cable duct. Lift the cable duct to one side.

Remove the two screws from the gear position sensor.

Carefully lift the sensor off the gear shift linkage rod.



Removing the connector from the gearbox

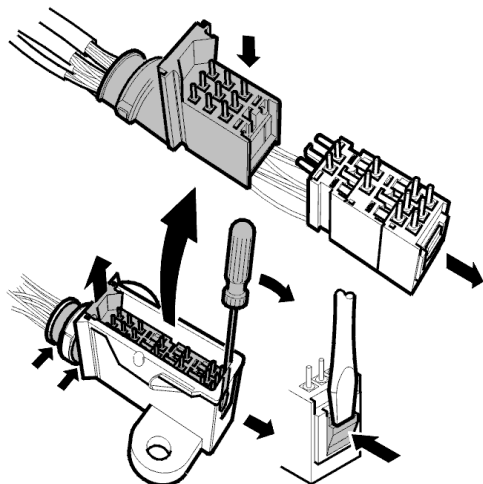
See [Temperature sensor, gearbox fluid, replacing](#) .

Disassembling the connector on the gearbox

Separate the cable clamps. Disconnect the connector from the gearbox.
Remove the sockets from the connector casing.
Remove the rubber seal from the connector.
Insert a screwdriver between the casing and socket. Press in the catch. At the same time, slide the sockets out of the casing.

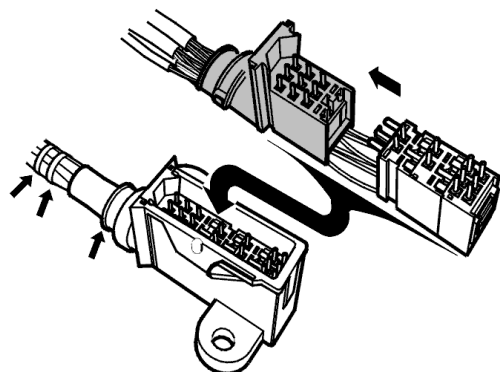
Detach the base for the gear-shift position sensor (9-pin) from other bases.

Remove the gear position sensor.



Assembling the connector

Reassemble the socket for the gear-shift position sensor with the other sockets.
Install the bases in the casing.
Install the rubber seal in position.
Install the cable clamps around the cable harness and the rubber seal.

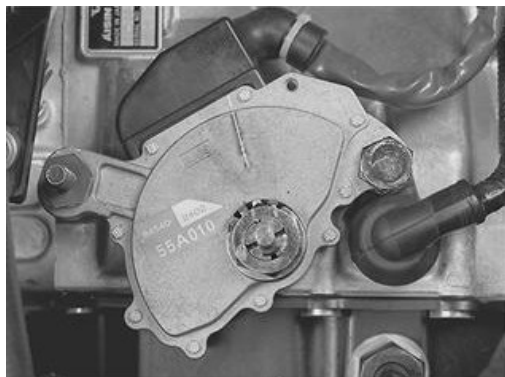


Installing the connector on the gearbox

See [Temperature sensor, gearbox fluid, replacing](#) .

Installing the gear-shift position sensor

Tighten the sensor screws lightly.
Install the rubber washer, lock washer and the nut on the gear shift linkage rod connection.
Tighten the nut.
Lock the nut with the lock washer.



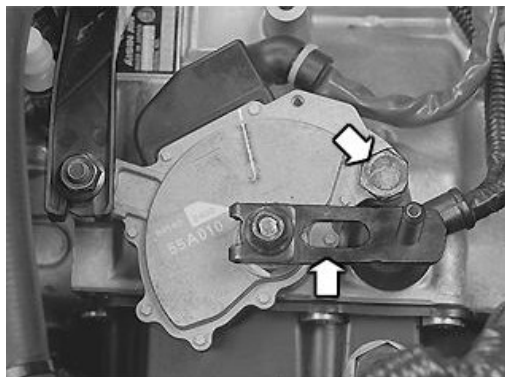
Adjusting the gear-shift position sensor

See [Checking and adjusting the gear-shift position sensor](#) .

Installing the gear-shift position sensor, continued

Install:

- the cable duct on the screw. Tighten the nut. Tighten to 25 Nm
- the lever on the gear shift linkage rod. Tighten to 16 Nm.

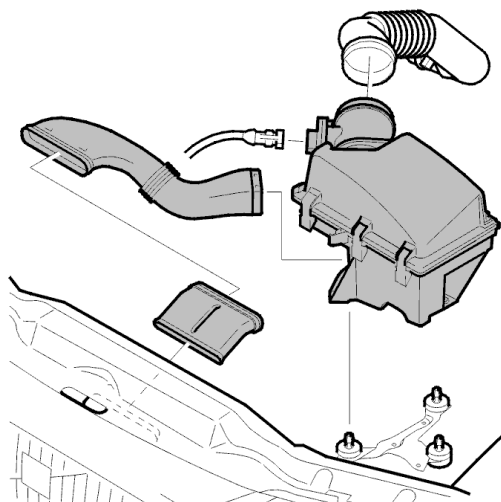


Installing the gear selector cable

See [Gear selector cables, replacing](#) .

Installing engine compartment components

Install the air cleaner (ACL) housing, including all hoses and electrical terminals.



Checking diagnostic trouble codes (DTCs)

Check and erase any diagnostic trouble codes (DTCs).

Gearbox input speed sensor, replacing

Note! As the illustrations in this service information are used for different model years and / or models, some variation may occur. However, the essential information is always correct.

Replacing the gearbox input speed

sensor

Replacing the gearbox input speed sensor V70 - 2000 and S80

Replacing the gearbox input speed sensor V70 - 2000, see [Replacing the gearbox input speed sensor V70 -2000](#)

Replacing the gearbox input speed sensor S80, see [Replacing the gearbox input speed sensor S80](#)

Replacing the gearbox input speed sensor V70 -2000

Removing engine compartment components

Ignition off.

Remove:

- the air cleaner (ACL) housing and the intake manifold
- the battery
- the battery shelf.



Removing the gear selector cable

Remove:

- the screws from the bracket for the gear selector cable
- the cable from the lever. Move the cable to one side
- the screws for the large connector. Separate the connector.



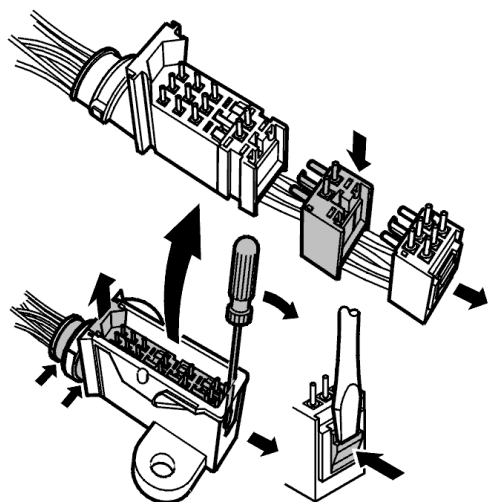
Disassembling the large connector

Remove:

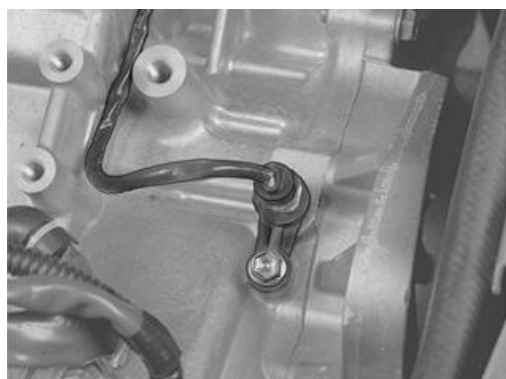
- the tie straps around the rubber seal for the connector and cable harness
- the rubber seal.

Insert a screwdriver between the casing and socket. Press in the lock while sliding the bases out of the casing.

Detach the base for the gearbox input speed



sensor from the other bases.



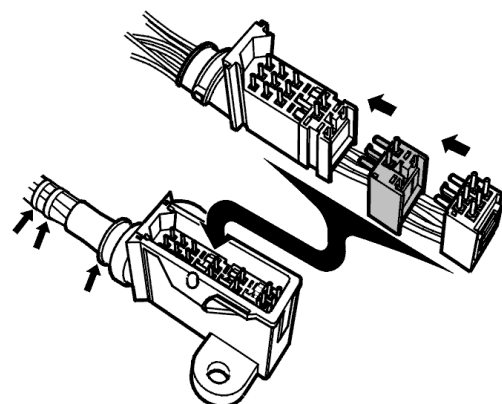
Replacing the sensor

Clean thoroughly around the sensor.

Remove the sensor

Install the new sensor

Apply a little Vaseline to the sensor O-ring.
Tighten to 5.5 Nm.



Assembling the connector

Ensure that the rubber seal is in position.
Install the tie straps around the rubber seal.

Installing the gear selector cable

Install:

- the large connector and the bracket. Tighten the smaller connector. Tighten to 25 Nm.
Connect the large connector
- the tie straps for the cable harness
- the cable on the lever
- the screws for the bracket. Tighten to 25 Nm.



Installing engine compartment components

Install:

- the battery shelf
- the air cleaner (ACL) housing and the intake manifold
- the battery.

Checking diagnostic trouble codes (DTCs)

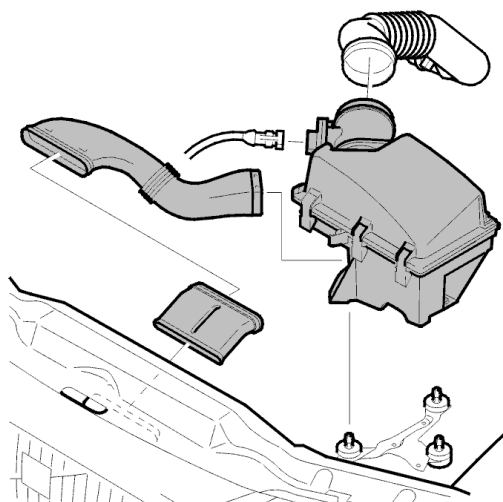
Check and erase any diagnostic trouble codes (DTCs).

Replacing the gearbox input speed sensor S80

Removing engine compartment components

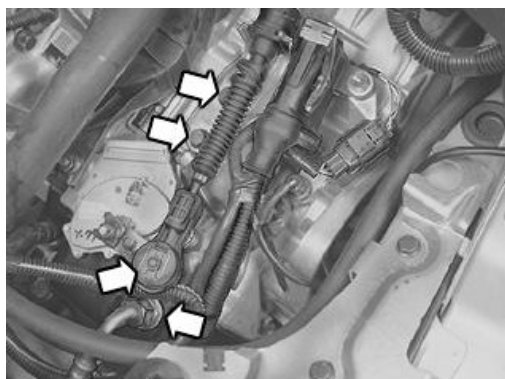
Ignition off.

Remove the air cleaner (ACL) housing assembly with the intake manifold.



Removing the gear selector cable

Remove:



- the screws from the bracket for the gear selector cable
- the cable from the lever. Move the cable to one side
- the screws for the large connector. Separate the connector.

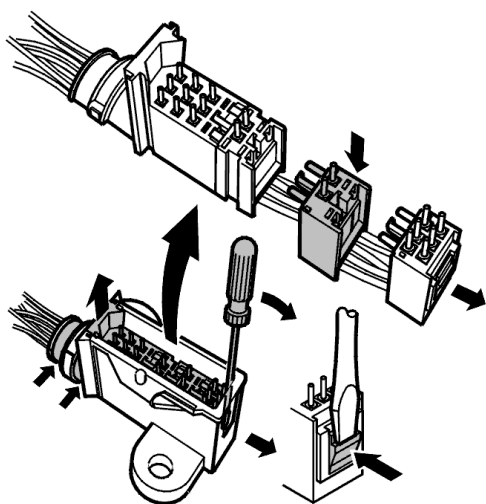
Disassembling the large connector

Remove:

- the tie straps around the rubber seal for the connector and cable harness
- the rubber seal.

Insert a screwdriver between the casing and socket. Press in the lock while sliding the bases out of the casing.

Detach the base for the gearbox input speed sensor from the other bases.



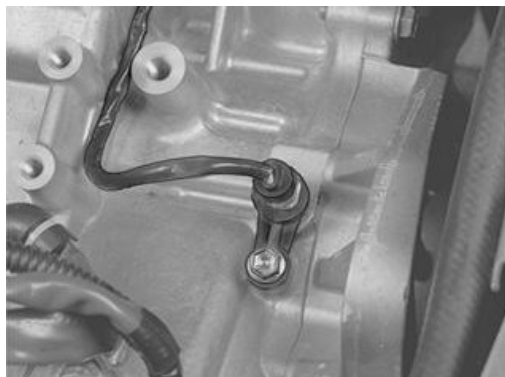
Replacing the sensor

Clean thoroughly around the sensor.

Remove the sensor

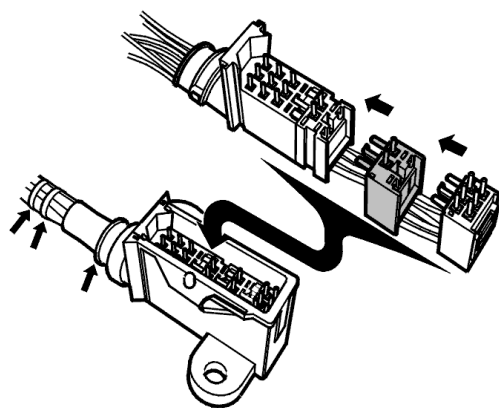
Install the new sensor

Apply a little Vaseline to the sensor O-ring. Tighten to 5.5 Nm.



Assembling the connector

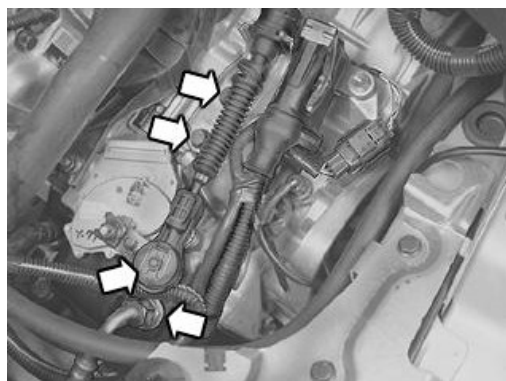
Ensure that the rubber seal is in position. Install the tie straps around the rubber seal.



Installing the gear selector cable

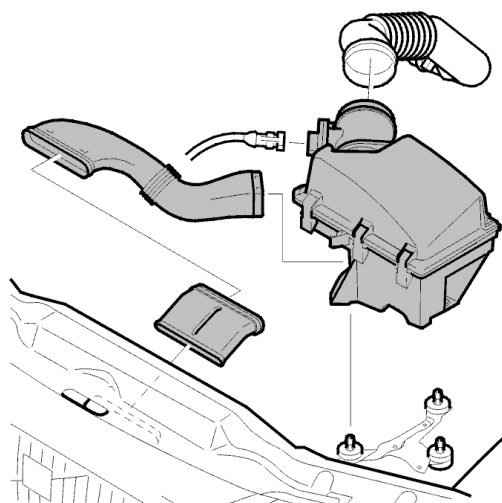
Install:

- the large connector and the bracket. Tighten the smaller connector. Tighten to 25 Nm. Connect the large connector
- the tie straps for the cable harness
- the cable on the lever
- the screws for the bracket. Tighten to 25 Nm.



Installing engine compartment components

Install the air cleaner (ACL) housing, including all hoses and electrical terminals.



Checking diagnostic trouble codes (DTCs)

Check and erase any diagnostic trouble codes (DTCs).

Gearbox output speed sensor, replacing

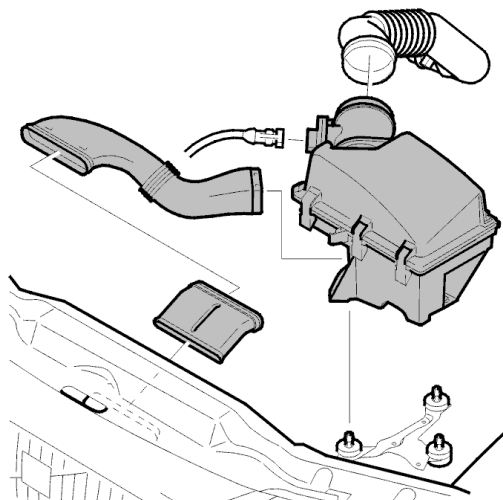
Note! As the illustrations in this service information are used for different model years and / or models, some variation may occur.

However, the essential information is always correct.

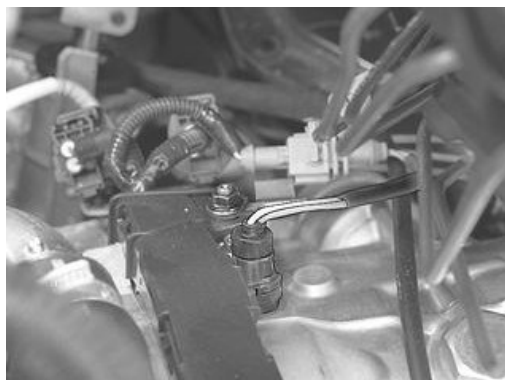
Preparations

Ignition off.

Removing the air cleaner (ACL) housing and intake manifold

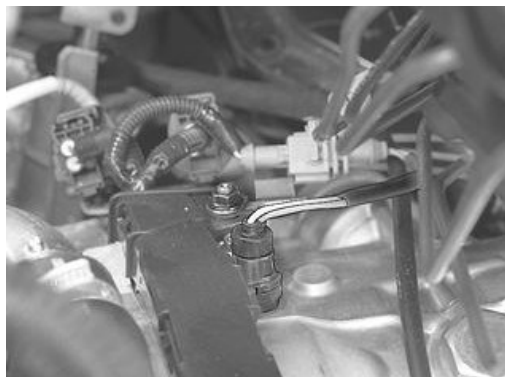


Disassembling the connector for the gearbox output speed sensor. Removing the sensor



Remove the nut for the cable duct / bracket.
Unhook the components.
Clean thoroughly around gearbox output speed sensor. Remove the sensor.

Lubricating the O ring for the new gearbox output speed sensor. Installing the sensor

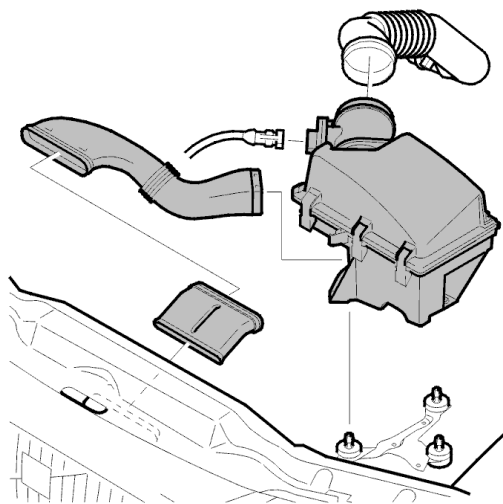


Install the sensor. Tighten to 5.5 Nm.

Install:

- the bracket and cable duct. Tighten to 5.5 Nm
- the connector.

Installing the air cleaner (ACL) housing and intake manifold



Checking diagnostic trouble codes (DTCs)

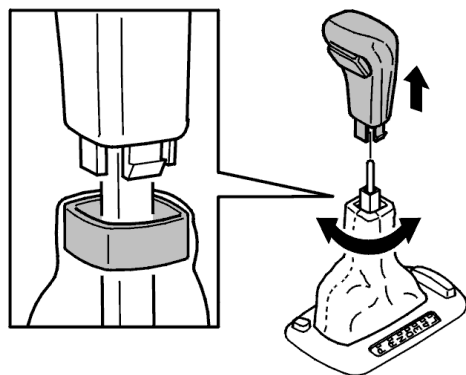
Check and erase any diagnostic trouble codes (DTCs).

Replacing the gear selector assembly

Removal

Removing the gear selector knob

Turn the circlip inside the boot 1/4 turn. Pull the boot downwards.
Pull the knob off the gear selector.



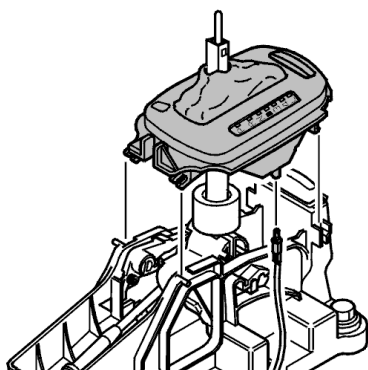
Removing the center console

See [Replacing the center console](#) .

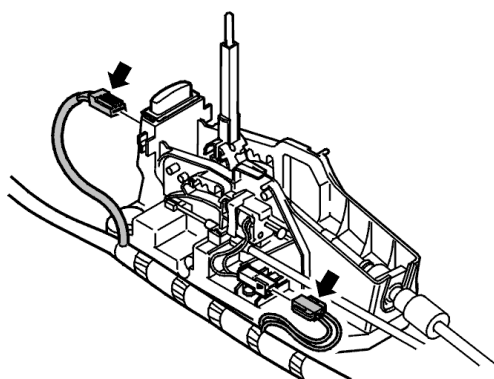
Removing the top panel and boot

Remove:

- the lamp from its holder
- the top panel from the gear selector assembly. Detach the rear edge of the panel first.

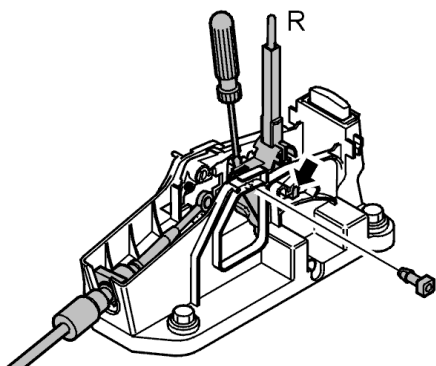


Removing the connector from the mode selector switch and from the gear selector assembly solenoid



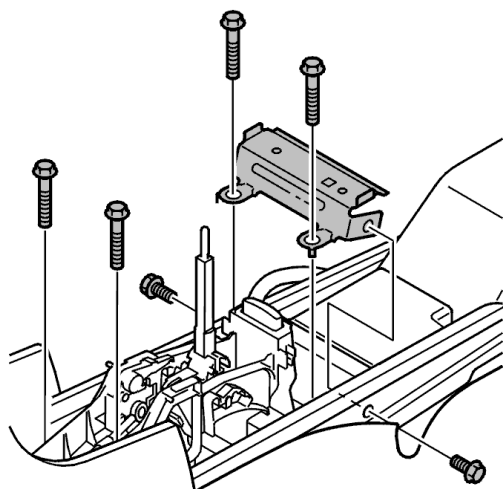
Removing the cable from the gear selector assembly gear selector

Move the gear selector to position R.
Remove the cable locking by pressing it out with a screwdriver.



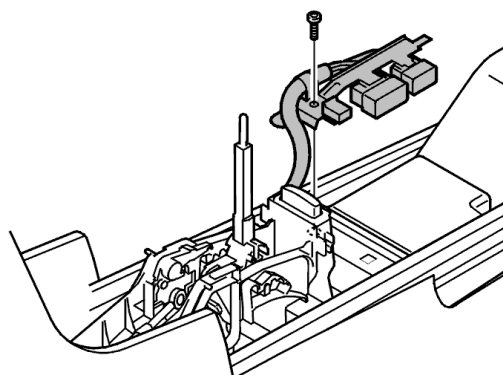
Removing screws and the cross piece from the SIPS members

Fold the carpet out of the way on both sides.
Remove the screws and the cross piece.



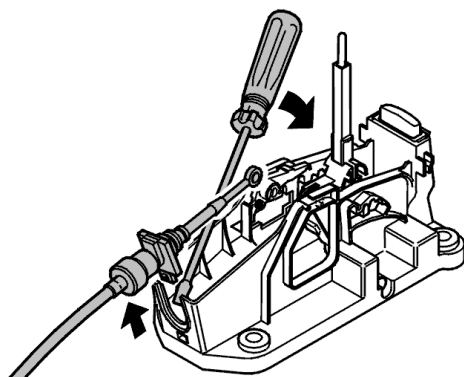
Removing the connector bracket from the gear selector assembly

Secured with one screw.



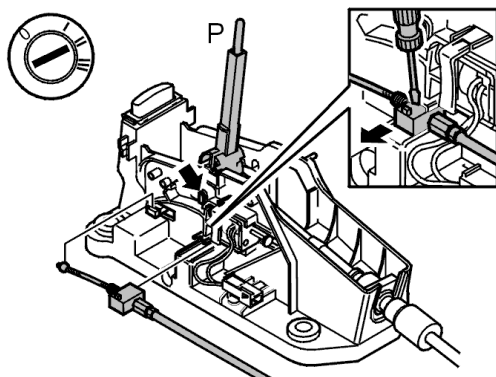
Removing the cable from the gear selector assembly

Angle the gear selector assembly forward. Remove the cable sleeve from the front mounting. Use a screwdriver.



Removing the ignition switch interlock cable from the gear selector assembly

Move the gear selector to position P. Turn the ignition key to position I or II. Carefully pry out the cable adjuster with a small screwdriver. Remove the cable from the lever.

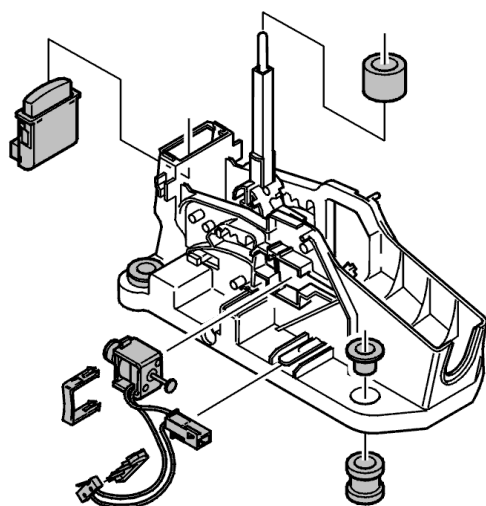


Remove the gear selector assembly.

Transferring components

Transfer the following components to the new gear selector assembly (replace any damaged components):

- the rubber bushings and spacer sleeves
- the solenoid and the connector
- the mode selector switch
- the foam rubber ring.



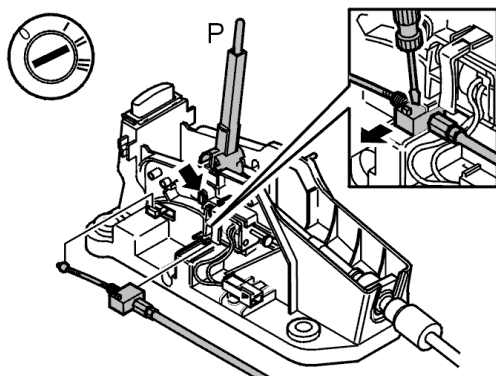
Installing the gear selector assembly

Installing the ignition switch interlock cable in the gear selector assembly

Install:

- the gear selector assembly (without screws)
- the cable on the lever
- the cable adjuster in its mounting.

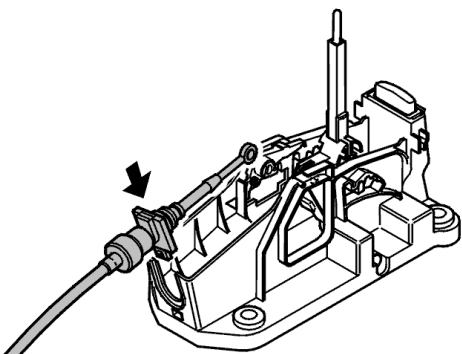
Check that the ignition key can be removed when gear position P is selected. Adjust if necessary.



Installing the cable sleeve on the gear selector assembly

Install:

- the cable sleeve on end of gear selector assembly
- the cable on the gear selector lever. Lock it.



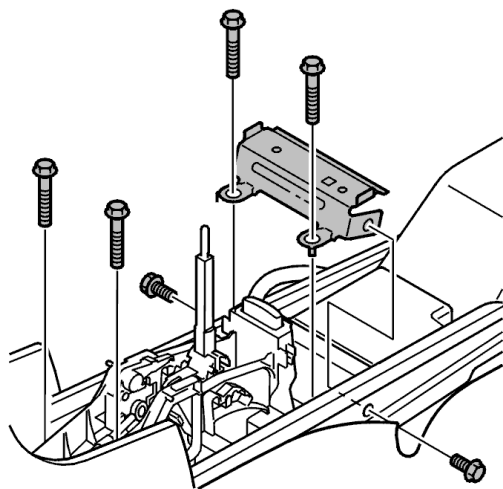
Installing the cross piece between the SIPS members

Adjust the gear selector assembly so that its rubber bushings align in the guide sleeves.

Install:

- the cross piece
- the screws for the gear selector assembly
- the side screws.

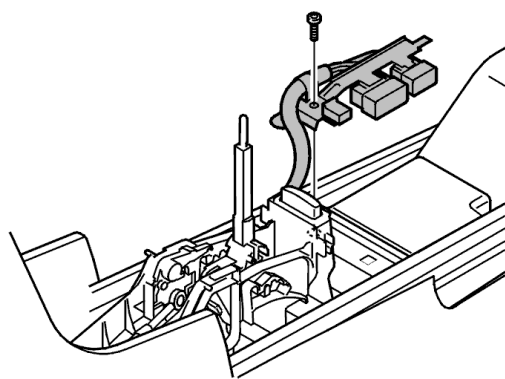
Tighten the screws to 25 Nm.



Installing the bracket

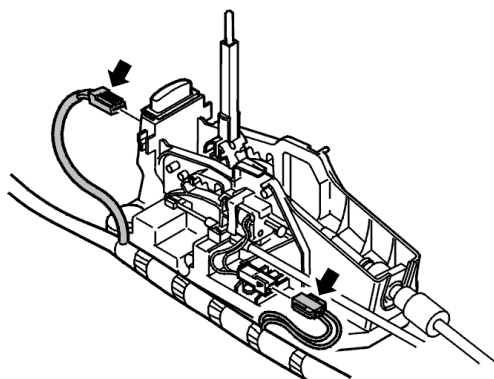
Install the bracket and connectors. Tighten the screw.

Tighten all (large) screws to 25 Nm.



Connect the connector to the mode selector switch

Connect the solenoid connector on the gear selector assembly.



Installing the top panel

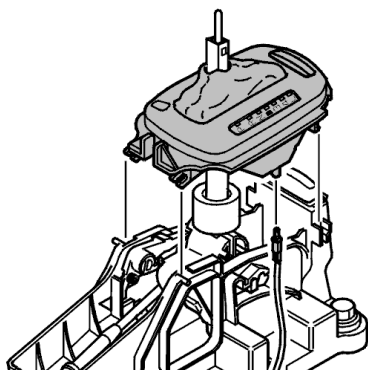
Move the gear selector to position P.

Position the gear selector indicator lug as far forward as possible.

Press the top panel into place.

Install the bulb holder.

Check that the gear selector indicator moves when shifting.



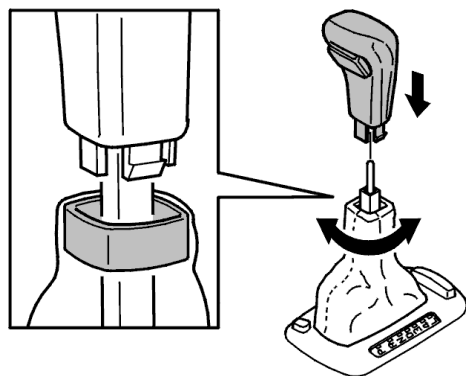
Installing the gear selector knob on the gear selector assembly

Pull out the catch. Hold it out while installing the gear selector. This is so that the push rod locates correctly.

Pull up on the boot on the knob so that it engages in the locking.

Pull up the locking sleeve on the gear selector knob.

Check that the gear positions are working.



Installing the center console

See [Replacing the center console](#) .

Replacing the carrier plate

Special tools: [999 5112](#) , [999 5678](#)

Removal

Preparatory work

Remove the gearbox according to [Removing the gearbox](#) .

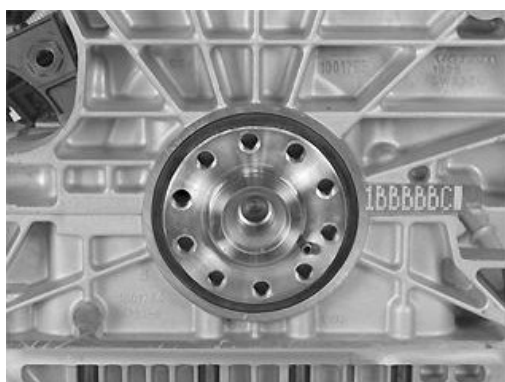
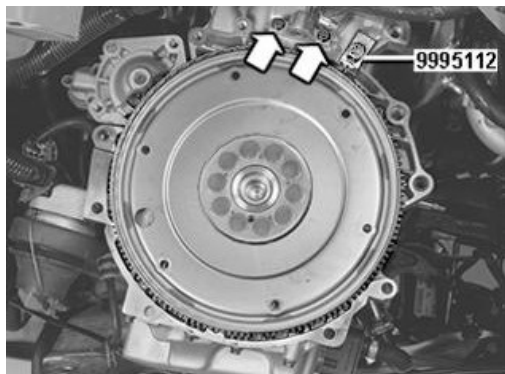
Removing the carrier plate

Remove the engine speed (RPM) sensor with the bracket. Place it to one side.

Block the carrier plate using gear sector [999 5112](#) .

Remove:

- all screws
- the carrier plate
- gear sector [999 5112](#) .



Check the crankshaft seal for leakage.

To replace the crankshaft seal, refer to the car model and year.

Installation

Installing the carrier plate

Note! Ensure that the mating surfaces on the crankshaft and carrier plate are completely clean.

Use tool [999 5678](#) , which consists of 3 studs with nuts.

Install:

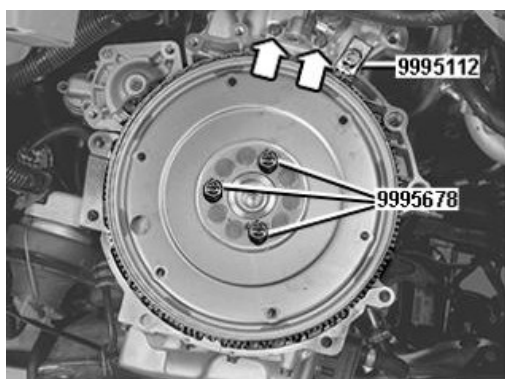
- The 3 studs belonging to tool [999 5678](#) , distributed as illustrated
- the carrier plate.

Note! Check that the locating pin on the crankshaft is positioned opposite the hole in the carrier plate.

Locate gear sector [999 5112](#) against the carrier plate.

Pull the flywheel towards the crankshaft using the three nuts on special tool [999 5678](#) .

Caution! The carrier plate must lie against the crankshaft flange before the screws are installed.



There is a risk that excess locking fluid on the screws will come between the mating surfaces.

Install 7 new screws. Tighten crosswise. Tighten to 45 Nm.

Remove the 3 nuts and studs.

Install the remaining 3 new screws. Tighten the screws. Tighten to 45 Nm. Then angle-tighten all 10 screws crosswise to 50°.

Install the engine speed (RPM) sensor with the bracket. Tighten to 10 Nm.

Finishing

Install the gearbox according to [Installing the gearbox](#).

Replacing differential seals

Special tools: [999 5768](#), [999 5769](#), [999 5770](#), [999 5771](#)

Note! As the illustrations in this service information are used for different model years and / or models, some variation may occur. However, the essential information is always correct.

Left-hand side

Preparatory work

Remove the drive shaft according to [Removing drive shafts](#)

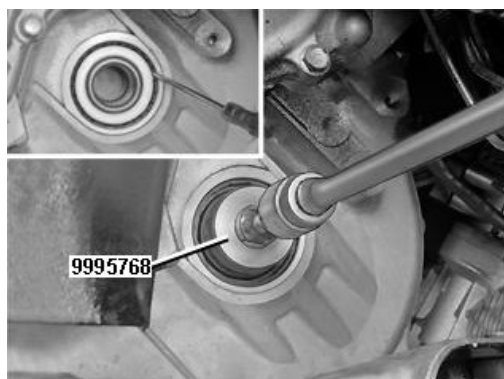
Removing the differential seals, left-hand side

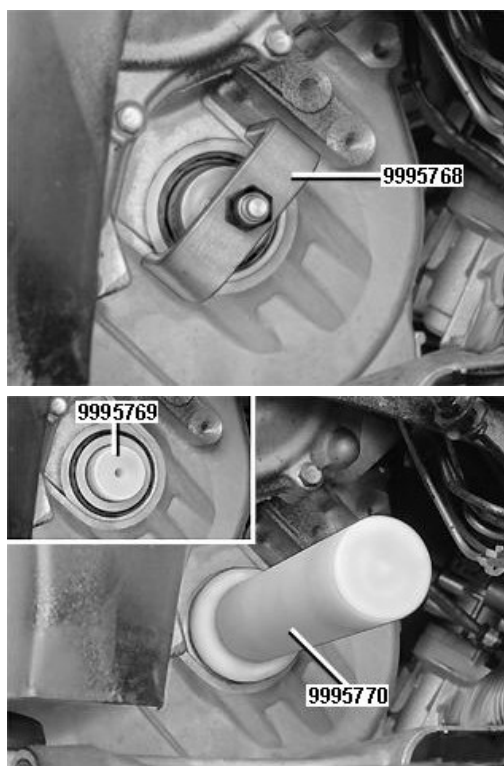
Place a container underneath the gearbox. Remove the metal ring in the seal. Use a small screwdriver.

Note! Do not insert the screwdriver between the ring and the end of the shaft. This may damage the mating surface.

Install the cap nut for extractor [999 5768](#). Lightly grease the locating pin on the extractor. Use a ratchet with an extension and socket. Press the extractor in against the seal at the same time as the extractor is turned. Tighten so that the threaded cone screws firmly into the seal.

Remove the cap nut for the extractor. Install the extractor bracket and nut.





Remove the seal.
Check that no seal residue is left.

Lubricate the edges of the new seal using automatic gearbox fluid.
Install locating pin [999 5769](#) .
Install the seal on the locating pin. Use drift [999 5770](#) .
Tap in the seal until the drift is against the gearbox.
Remove the locating pin.

Check the oil level according to [Checking the oil level](#)

Install the drive shaft according to [Installing drive shafts](#)

Right-hand side

Preparatory work

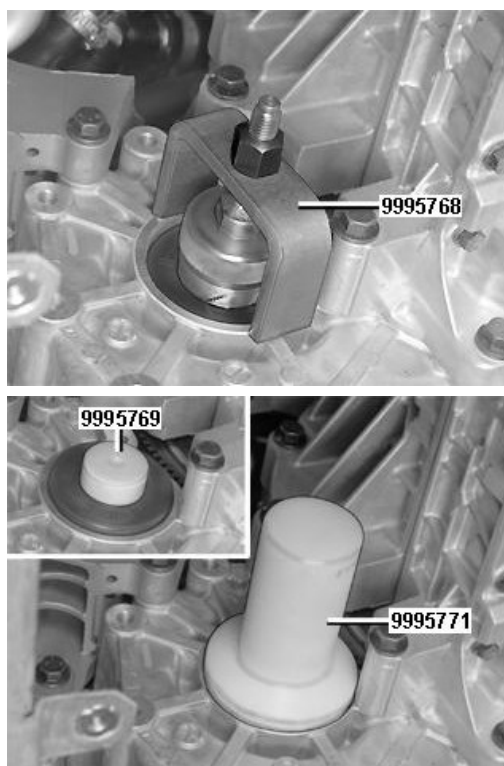
Remove the drive shaft according to [Removing drive shafts](#)

Removing the differential seals, right-hand side

Place a container underneath the gearbox.
Install the cap nut for extractor [999 5768](#) .
Lightly grease the locating pin on the extractor.
Use a ratchet with an extension and socket.
Press the extractor in against the seal at the same time as the extractor is turned.
Tighten so that the threaded cone screws firmly into the seal.



- Remove the cap nut from the extractor
- Install the extractor bracket and nut
- Remove the seal
- Check that no seal residue is left.



Lubricate the edges of the new seal using automatic gearbox fluid.

Install locating pin [999 5769](#) .

Install the seal on the locating pin. Use drift [999 5771](#) .

Tap in the seal until the drift is against the gearbox.

Remove the locating pin.

Check the oil level according to [Checking the oil level](#)

Install the drive shaft according to [Installing drive shafts](#)