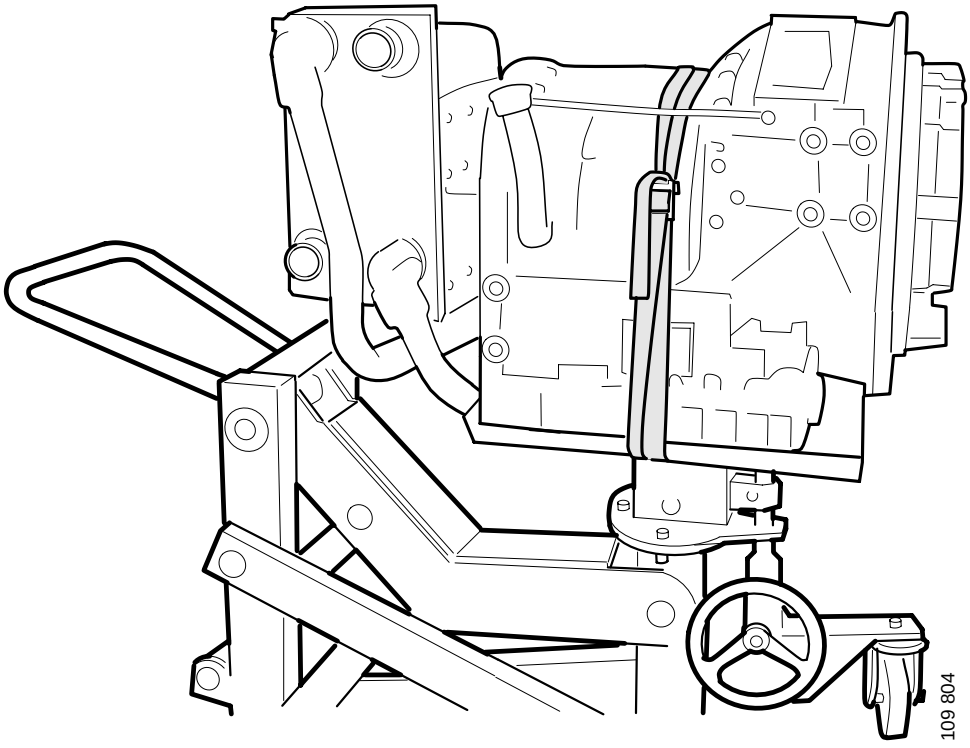
SCANIA

05:08-52

Issue 1 **en**

Automatic gearbox

Removal and fitting



1 710 716

Contents

Bus with longitudinal engine

Removal

Conditions:

The master switch should be turned off.

The air suspension should be fully lowered.

If the gearbox is to be removed only temporarily so that work can be carried out on the engine, for example, the fluid need not be drained from it.

For draining the fluid from the gearbox, see Automatic gearbox, Service instructions and modifications for the 4 series.

Work operations in the engine bay

1 Close the taps between the engine cooling system and the bus heating system. If this is not done, a lot of the coolant will run out. See the coachbuilder’s instructions.

Work operations from inside the bus

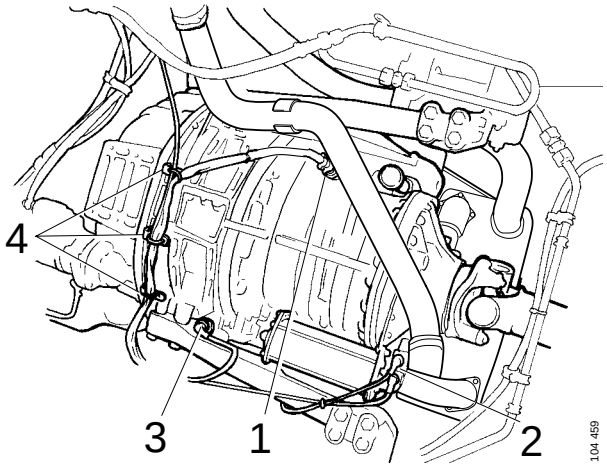
2 Remove the access hatch in the floor above the gearbox.

3 Undo electrical connection 1.

4 Disconnect the electric and compressed air connections from solenoid valve 2 of the accumulator.

5 Disconnect the electric connection from temperature sensor 3.

6 Undo the four upper nuts securing the gearbox in the flywheel housing. Bend up cable clamps 4.



1 Electrical connection
2 Accumulator solenoid valve
3 Temperature sensor
4 Cable clamps

Working from underneath

7 Raise the vehicle using wheel lifts 587 496.

Note: A wheel lift is needed for each wheel. Six lifts will therefore be needed for a three-axle bus.

8 Remove the noise shields under the engine.

9 Drain the coolant, using adapter 99 301.

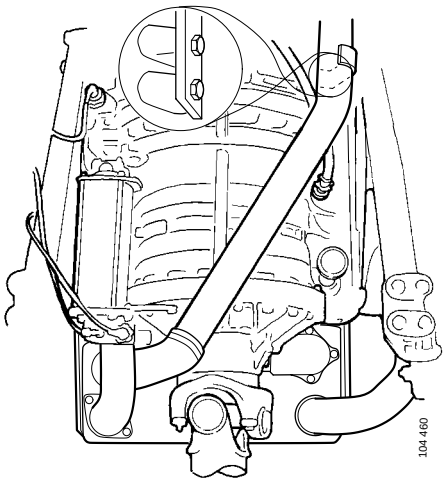
Note: The taps between the engine cooling system and the bus heating system should be closed. If they are not, a lot of the coolant will run out.

10 Remove the propeller shaft. It weighs about 30 kg (50 kg on tag-axle buses).

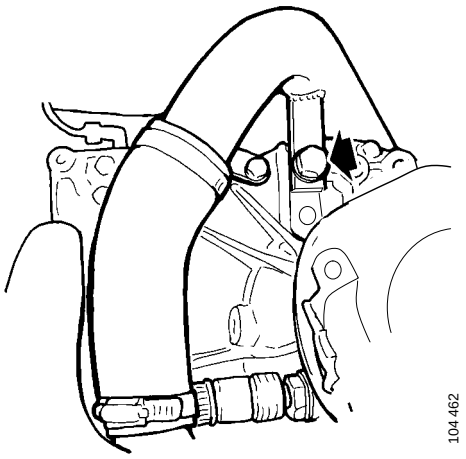
WARNING!

Watch out for hot coolant. Wear protective gloves and goggles.

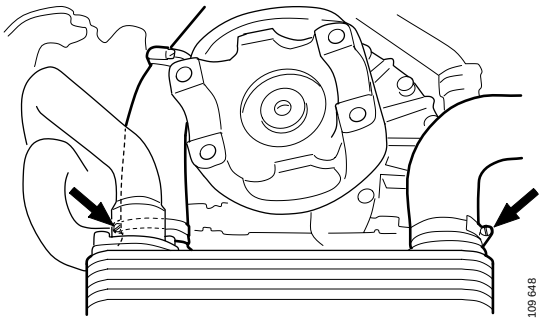
11 Undo the coolant manifold's attachment to the gearbox, beside the electric connection.



12 Undo the coolant manifold's attachment, beside the end yoke.

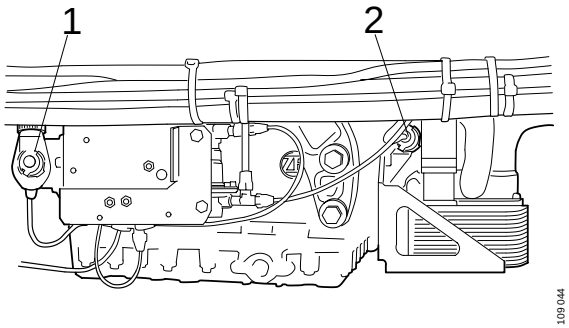


13 Detach the coolant manifold hose connections from the fluid cooler.



14 Detach the electric and compressed air connections from retarder solenoid valve 1.

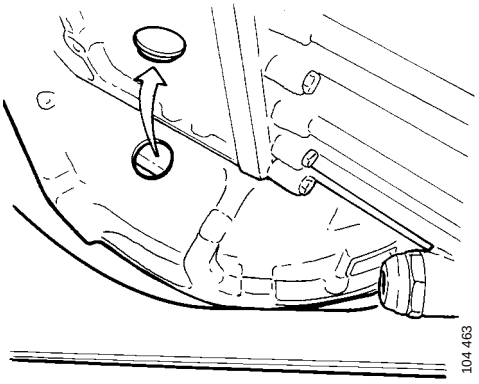
15 Release the catch on the electric connection for speedometer sensor 2. Unplug the sensor's connector.



1 Retarder solenoid valve
2 Speedometer sensor

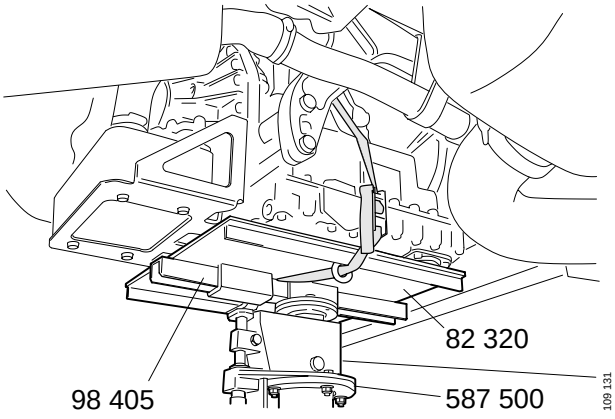
16 Remove the protective plug from the flywheel housing.

17 Remove the 10 bolts securing the drive plate to the torque converter. Turn the flywheel using turning tool 99 309.



18 Position component lift 587 500 with fixture beam 98 405 and support plate 82 320 under the gearbox oil sump.

19 Secure the gearbox with a strap fastened round the support plate and gearbox.



20 Remove the bolts securing the gearbox brackets to the gearbox.

21 Place wooden blocks or the like as spacers between the flywheel housing and crossmember. Lower the gearbox until the flywheel housing rests on the spacers.

22 Remove the remaining nuts securing the gearbox to the flywheel housing.

23 Withdraw the gearbox, making sure that nothing catches on it.

Fitting

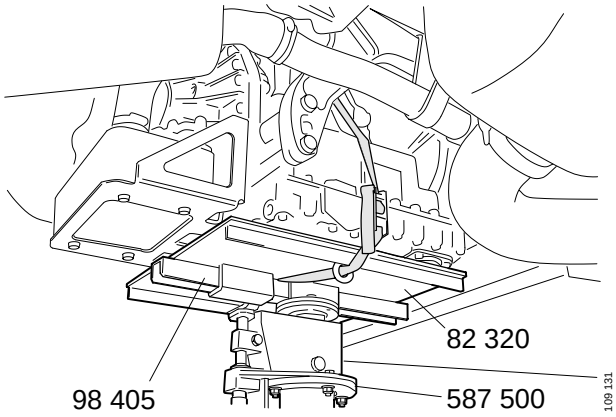
Working from underneath

1 Raise the vehicle using wheel lifts 587 496.

Note: A wheel lift is needed for each wheel. Six lifts will therefore be needed for a three-axle bus.

2 Position the gearbox on component lift 587 500 with fixture beam 98 405 and support plate 82 320 under the gearbox oil sump.

3 Secure the gearbox with a strap fastened round the support plate and gearbox.



4 Turn the flywheel until one of the holes in the drive plate lines up with the access hole in the flywheel housing.

5 Raise the gearbox and then turn the torque converter until the holes in it are in line with the holes in the drive plate. Insert a screwdriver as a centring tool.

6 Position the gearbox against the flywheel housing and tighten the nuts holding them together.

Tightening torque 47 Nm.

7 Raise the gearbox and bolt the gearbox brackets to it.

8 Remove the component lift.

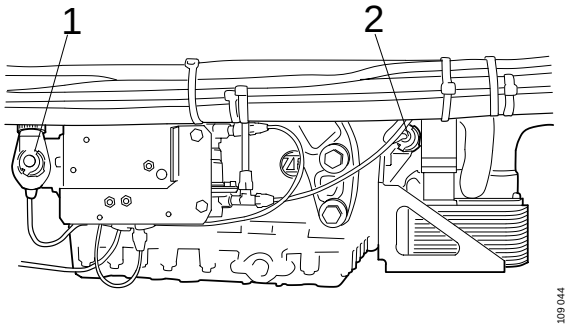
9 Bolt the drive plate to the torque converter by means of 10 bolts. Turn the flywheel using turning tool 99 309.

Tightening torque 84 Nm.

10 Refit the protective plug in the flywheel housing hole.

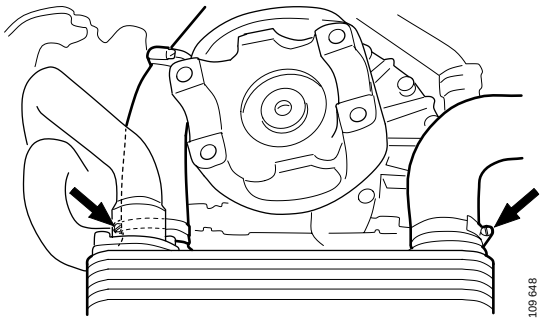
11 Plug the connector into the speedometer sensor.

12 Refit the electric and compressed air connections on the retarder's solenoid valve.

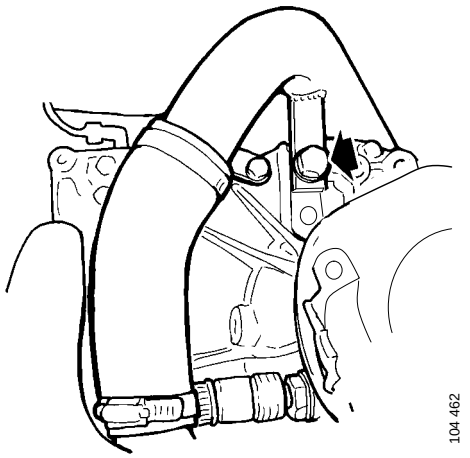


1 Retarder solenoid valve
2 Speedometer sensor

13 Refit the coolant manifold hose connections on the fluid cooler.



14 Refit the coolant manifold's attachment beside the end yoke.



15 Fit the propeller shaft.

16 Fill up with coolant.

17 Refit the noise shields under the engine.

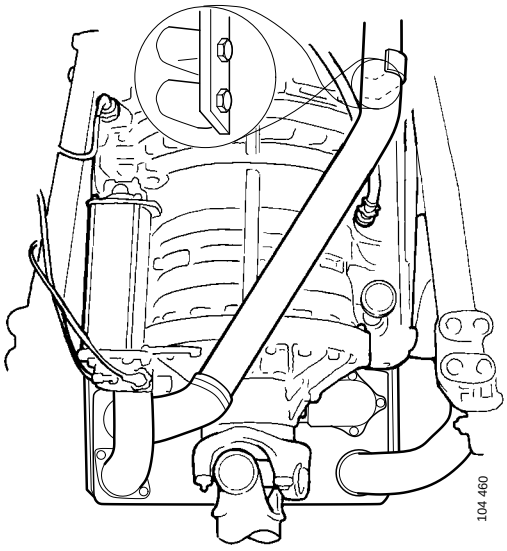
18 Lower the vehicle to the floor.

Working from above

19 Fasten the coolant manifold's attachment beside the electric connection.

20 Fit the four upper nuts securing the gearbox to the flywheel housing.

Tightening torque 47 Nm.

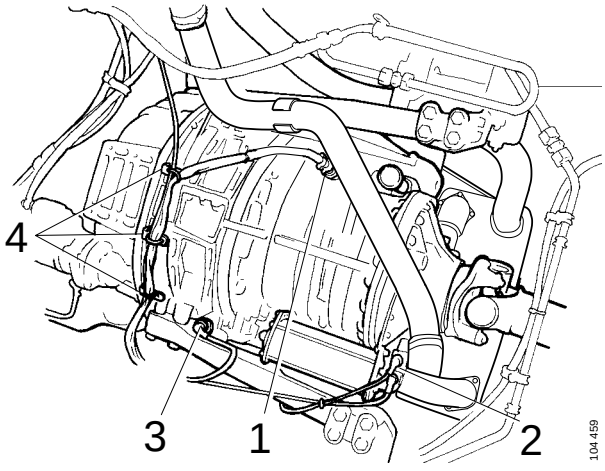


21 Fit cable clamps 4.

22 Fit the electric connection on temperature sensor 3.

23 Fit the electric and compressed air connections on pressure accumulator solenoid valve 2.

24 Fit electric connection 1.



1 Electrical connection
2 Accumulator solenoid valve
3 Temperature sensor
4 Cable clamps

25 Check the fluid level and top up as necessary, see Automatic gearbox, Service instructions and changes for the 4 series.

26 Check the setting of the load sensor as described in Automatic gearbox, Service instructions and changes for the 4 series.

Important: Be sure to carry out this check with great care. If the setting is wrong the gearbox could be damaged.

Work operations in the engine bay

27 Open the taps between the engine cooling system and the bus heating system, see the coachbuilder's instructions.

Bus with transverse engine

Removal

Conditions:

The master switch should be turned off.

The air suspension should be fully lowered.

Work operations from inside the bus

1 Remove the access hatch by the rear bench seat.

2 Undo the two nuts securing the gearbox to the flywheel housing which are not accessible from underneath.

Work operations in the engine bay

3 Remove the noise shields under the engine bay.

4 Drain the coolant using adapter 99 301.

Note: Close the taps between the engine cooling system and the bus heating system. If this is not done, a lot of the coolant will run out. See the coachbuilder's instructions.

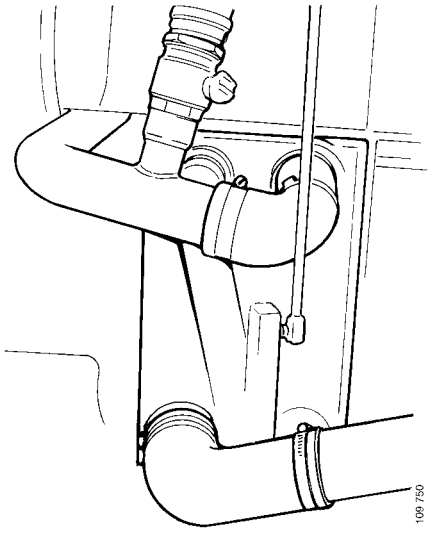
WARNING!

Watch out for hot coolant. Wear protective gloves and goggles.

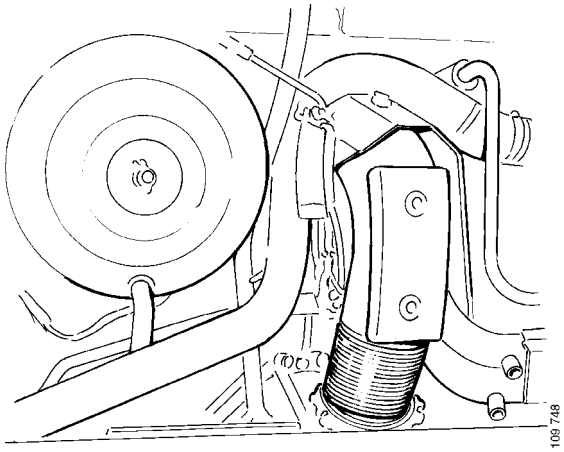
5 Undo the coolant manifold attachments to the gearbox.

6 Detach the coolant manifold hose connections from the fluid cooler.

7 Suspend the coolant manifold in the engine bay so that it causes no obstruction when the gearbox is removed.



8 Detach the exhaust pipe from the engine's branch pipe.



Working from underneath

9 Raise the vehicle using wheel lifts 587 496.

Note: A wheel lift is needed for each wheel. Six lifts will therefore be needed for a three-axle bus.

10 Remove the beam under the left-hand engine compartment hatch.

11 Remove the exhaust pipe running under the gearbox.

12 Remove the exhaust pipe bracket mounted on the engine beam.

13 Remove the diagonal stay located under the gearbox.

14 Detach the electric and compressed air connections from the retarder and pressure accumulator solenoid valves.

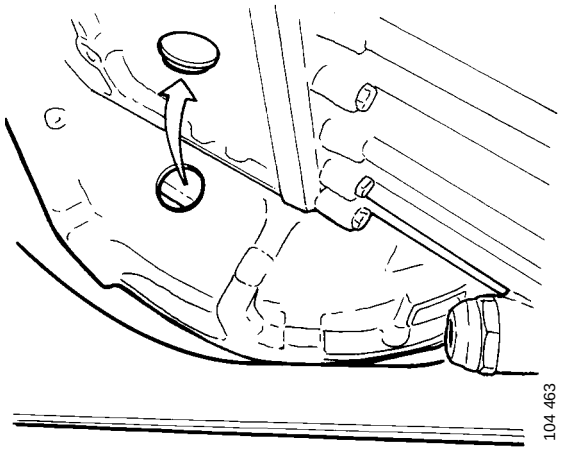
15 Release the catch on the speedometer sensor. Unplug the sensor's connector.

16 Detach the propeller shaft from the gearbox.

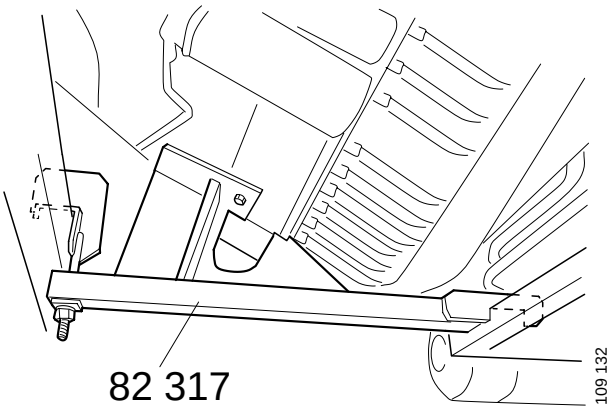
17 Remove the starter motor on buses where it is mounted under the engine.

18 Remove the protective plug from the flywheel housing.

19 Remove the 10 bolts securing the drive plate to the torque converter. Turn the flywheel using turning tool 99 309.



20 Support the engine using engine support 82 317. Place the support on the beam in front of the engine. Fasten the support's hook to the engine beam and align the support with the engine. Tension the support against the engine by means of the nut. Bolt the support to the engine block using an M10x20 bolt.



21 Remove the gearbox attachment to the engine bay wall. Remove the gearbox bracket and vibration isolator.

22 Position component lift 587 500 with fixture beam 98 405 and support plate 82 320 under the gearbox oil sump.

23 Secure the gearbox with a strap fastened round the support plate and gearbox.

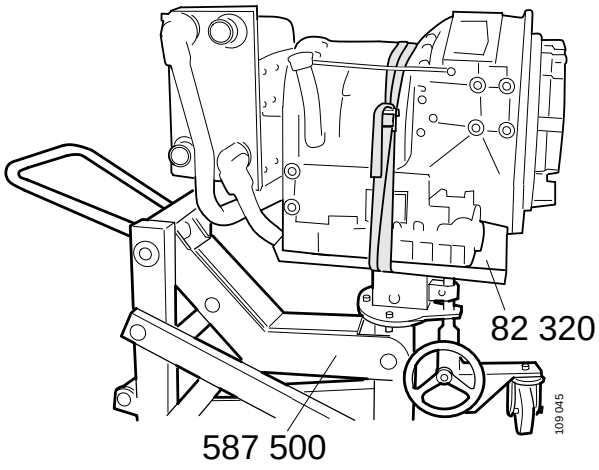
24 Undo the bolts securing the vibration isolator to the engine beam.

25 Remove the bracket between the vibration isolator and gearbox.

26 Unplug the gearbox's large connector and undo the two clamps securing the wiring.

27 Remove the remaining nuts securing the gearbox to the flywheel housing.

28 Withdraw the gearbox, making sure that nothing catches on it.



Fitting

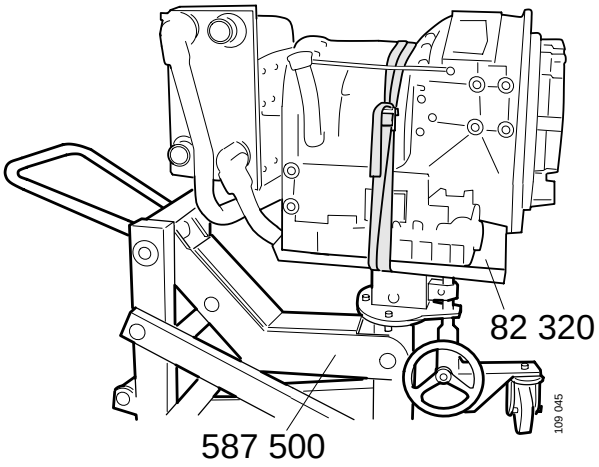
Working from underneath

1 Raise the vehicle using wheel lifts 587 496.

Note: A wheel lift is needed for each wheel. Six lifts will therefore be needed for a three-axle bus.

2 Position the gearbox on component lift 587 500 with fixture beam 98 405 and support plate 82 320 under the gearbox oil sump.

3 Secure the gearbox with a strap fastened round the support plate and gearbox.



4 Turn the flywheel until one of the holes in the drive plate lines up with the access hole in the flywheel housing.

5 Raise the gearbox and then turn the torque converter until the holes in it are in line with the holes in the drive plate. Insert a screwdriver as a centring tool.

6 Position the gearbox against the flywheel housing and tighten the nuts holding them together.

Tightening torque 47 Nm.

7 Remove the component lift.

8 Fit the bracket between the gearbox and vibration isolator on the engine beam.

9 Plug in the gearbox's large connector and secure the wiring with clamps.

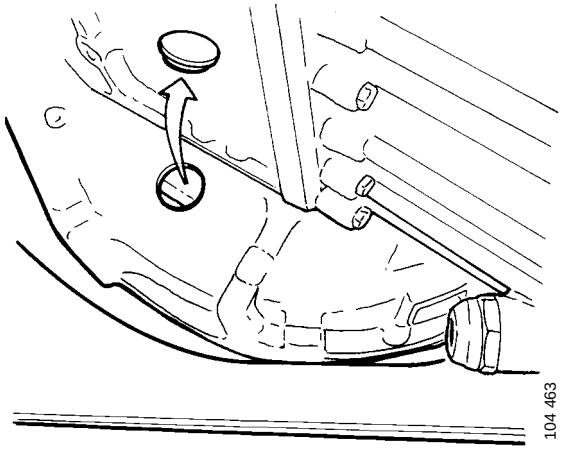
10 Fit the gearbox bracket and vibration isolator between the gearbox and engine bay wall.

11 Remove the engine support.

12 Bolt the drive plate to the torque converter by means of 10 bolts. Turn the flywheel using turning tool 99 309.

Tightening torque 84 Nm.

13 Refit the protective plug in the flywheel housing hole.



14 Bolt the propeller shaft to the gearbox. Use new locknuts.

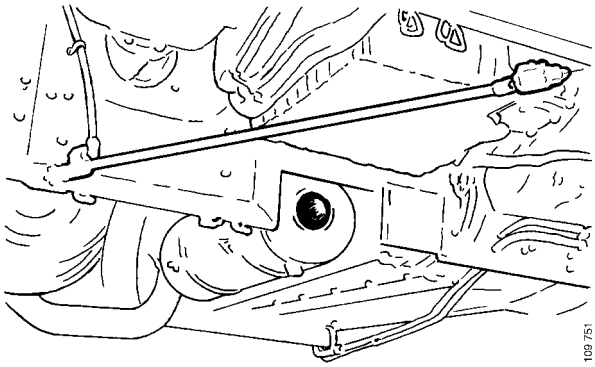
15 Fit the starter motor on buses where it is located under the engine.

16 Plug the connector into the speedometer sensor.

17 Fit the electric and compressed air connections on the retarder's and pressure accumulator's solenoid valves.

18 Fit the diagonal stay located under the gearbox.

Tightening torque 180 Nm.

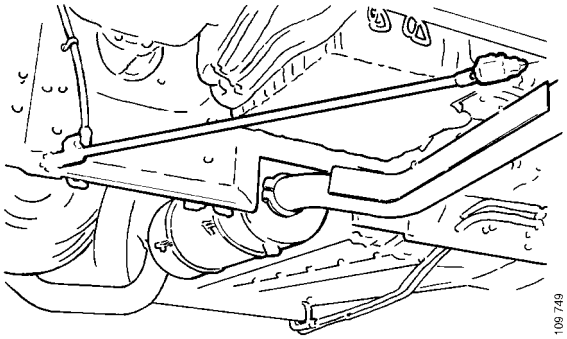


19 Fit the exhaust pipe and its bracket.

20 Fit the beam under the left-hand engine compartment hatch.

Tightening torque 135 Nm.

21 Lower the vehicle to the floor.



Work operations from inside the bus

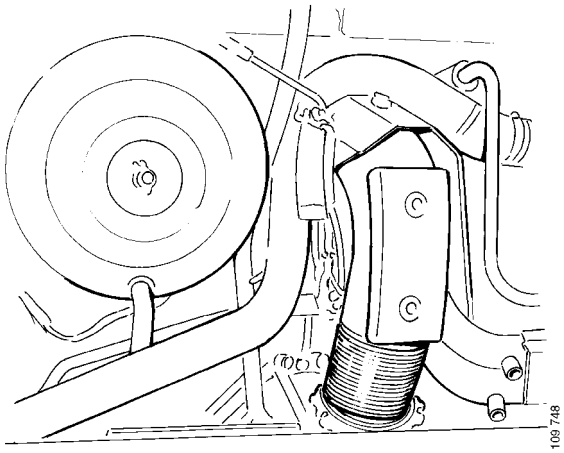
22 Fit the remaining nuts securing the gearbox to the flywheel housing.

Tightening torque 47 Nm.

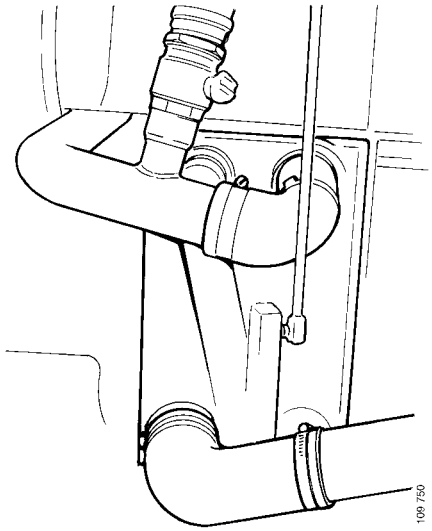
23 Fit the access hatch by the rear bench seat.

Work operations in the engine bay

24 Fit the exhaust pipe to the engine’s branch pipe.



25 Refit the coolant manifold hose connections on the fluid cooler.



26 Fit the coolant manifold brackets on the gearbox.

27 Fill up with coolant.

Note: Open the taps between the engine cooling system and the bus heating system, see the coachbuilder’s instructions.

28 Fit the noise shields under the engine bay.

29 Check the fluid level and top up as necessary, see Automatic gearbox, Service instructions and changes for the 4 series.

Tightening torque

	Longitudinal engine	Transverse engine
Drive plate - torque converter	84 Nm	84 Nm
Gearbox - flywheel housing	47 Nm	47 Nm
Gearbox bracket - gearbox	225 Nm	225 Nm
Gearbox bracket - vibration isolator	180 Nm	180 Nm
Vibration isolator - frame/body	112 Nm	112 Nm
Propeller shaft - gearbox	105 Nm	120 Nm
Diagonal stay under the gearbox	-	180 Nm
Beam under the left-hand engine compartment hatch	-	135 Nm

Special tools

Support	82 317
Support plate	82 320
Bracket and fixture beam	98 405
Adapter	99 301
Turning tool	99 309
Wheel lift	587 496
Component lift	587 500