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- Sequential gearbox: Removal - Refitting
Before removing the clutch, check:
- The direction of fitting for the clutch plate.

Before refitting the clutch, check:
- The flywheel friction track (no scratches or blue stains),
- The crankshaft bearing (no sticking),
- The engine and gearbox seals (replace if necessary),
- The sliding action of the clutch plate on the output shaft,
- The guide of the thrust bearing and clutch fork (no wear or scratches).

During refitting:
- Check the direction of the clutch plate.
- Centre the clutch plate using the (Emb. 1518) or (Emb. 1780).
- Gradually torque tighten the clutch pressure plate bolts.

After refitting, check:
- The clutch play (for a cable operated vehicle),
- Bleeding of the hydraulic circuit (for vehicles with hydraulic controls).

**WARNING**
To prevent the clutch from juddering or slipping, do not grease the output shaft or the clutch plate hub.

**Special tooling required**

<table>
<thead>
<tr>
<th>Special Tool</th>
<th>Description</th>
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<tbody>
<tr>
<td>Emb. 1518</td>
<td>Set of clutch plate centring mandrels</td>
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<tr>
<td>Emb. 1780</td>
<td>Set of clutch plate centring mandrels</td>
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</table>
CLUTCH
Clutch Specifications

Pressure plate
Pressure plate part no.: 180 CPOE 3300

Drive plate
Plate external diameter: 181.5 mm
Plate thickness: 6.7 mm
Number of splines: 26
Colour of springs (3): Grey
Colour of springs (4): Black

Pressure plate
Pressure plate part no.: 200 CPOE 3900

Drive plate
Plate external diameter: 200 mm
Plate thickness: 7 mm

D4F, and 740 or 742 or 764
102143
105680
D4F, and 784 or 786
102143
102142
Clutch Specifications

Number of splines: 26

Pressure plate part no: 200 CPOEH 3900

Drive plate

Plate external diameter: 200 mm
Plate thickness: 6.9 mm

Colour of springs: Grey

Pressure plate part no: 215 CPoVK 4400

Drive plate

Plate outer diameter: 215 mm

F4R or K4J or K4M
Clutch Specifications

- Plate thickness: 6.9 mm
- Number of splines: 26
- Colour of springs (1): Red and Black
- Colour of springs (2): Grey

Pressure plate:
- Plate outer diameter: 215 mm
- Plate thickness: 6.7 mm
- Number of splines: 26

M4R, and TL4 102143 117628
Pressure plate - Disc: Removal - Refitting

D4F or K4J or K4M or K9K, and 750 or 752 or 760 or 762 or 766 or 768

**REMOVAL**

1. Lock the engine using the tool (Mot. 582-01).
2. Remove the pressure plate mounting bolts (2).
3. Remove the friction plate.
4. Replace any faulty parts.

**REFITTING**

1. Position the clutch plate.
2. Centre the clutch plate using the tool (Emb. 1518).
3. Screw into place gradually in a radial pattern.
4. Torque tighten:
   - pressure plate mounting bolts (20 N.m),
   - pressure plate mounting bolts (15 N.m).
5. Remove the tool (Mot. 582-01).

---

Special tooling required

- Mot. 582-01: Flywheel locking tool.
- Emb. 1518: Set of clutch plate centring mandrels

Tightening torques:
- Pressure plate mounting bolts: 20 N.m
- Pressure plate mounting bolts: 15 N.m

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**WARNING**

- Degrease the flywheel friction face.
- Clean the clutch shaft splines.
- Refit the assembly without lubricant.
**Removal Preparation Operation**

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
- Disconnect the battery (see Battery (MR 392, 80A, Battery)).
- Remove the gearbox (see Manual gearbox: Removal - Refitting, page 21A-12).

**Operation for Removal of Part Concerned**

- Lock the engine using the Mot. 582-01.
- Remove the pressure plate mounting bolts (Emb. 1780).
- Remove the pressure plate and the friction plate.

**Refitting Preparation Operation**

- Degrease the flywheel friction face.
- Clean the clutch shaft splines.

**Refitting Operation for Part Concerned**

- Position the clutch plate.
- Centre the clutch plate using the Emb. 1780.
- Fit the pressure plate.
- Gradually tighten the clutch pressure plate mounting bolts radially.
- Torque tighten the mechanism mounting bolts (20 N.m).

**Final Operation**

- Remove the Mot. 582-01 and Emb. 1780.
- Refit the gearbox (see Manual gearbox: Removal - Refitting, page 21A-12).
- Connect the battery (see Battery (MR 392, 80A, Battery)).

**Special Tooling Required**

- Mot. 582-01: Flywheel locking tool.
- Emb. 1780: Set of clutch plate centring mandrels.

**Tightening Torques**

- Mechanism mounting bolts: 20 N.m.
REMOVAL
I - REMOVAL PREPARATION OPERATION

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

a Disconnect the battery (see ) (MR 392, 80A, Battery).


II - OPERATION FOR REMOVAL OF PART CONCERNED

a Lock the engine using tool (Mot. 1677) (1).

a Slide the bolts (2) out of the mechanism.

a Remove the mechanism.

a Remove the clutch plate (3).

REFITTING
I - REFITTING PREPARATION OPERATION

a Degrease the flywheel friction face.

a Clean the clutch shaft splines.

Special tooling required

Mot. 1677 Flywheel locking tool.

Emb. 1780 Set of clutch plate centring mandrels.

Tightening torques

m clutch mechanism bolts

initial torque: 15 Nm

25 Nm

117579 102143 117628
**CLUTCH**

Pressure plate - Disc: Removal - Refitting

### II - REFITTING OPERATION FOR PART CONCERNED

1. Position the clutch driven plate.
2. Centre the clutch plate using tool (Emb. 1780).
3. Pretighten to torque and in order the clutch mechanism bolts (initial torque: 15 Nm).
4. Torque tighten the clutch mechanism bolts (25 Nm).

### III - FINAL OPERATION

1. Remove the (Mot. 1677) and (Emb. 1780).
3. Connect the battery (see ) (MR 392, 80A, Battery).

**Note:** Position the clutch plate with the section (5) against the flywheel.
CLUTCH
Pressure plate - Disc: Removal - Refitting

REMOVAL
I - REMOVAL PREPARATION OPERATION
a Remove the gearbox (see 21A, Manual gearbox, page 21A-12).

II - OPERATION FOR REMOVAL OF PART CONCERNED
a Lock the engine using the (Mot. 582-01).
a Slide the bolts (2) out of the mechanism.
a Remove the mechanism.
a Remove the clutch plate.

REFITTING
I - REFITTING PREPARATION OPERATION
a Degrease the flywheel friction face.
a Clean the clutch shaft splines.

Special tooling required
Mot. 582-01 Flywheel locking tool.
Emb. 1780 Set of clutch plate centring mandrels.

Tightening torques
m clutch pressure plate bolts 12 N.m
CLUTCH

Pressure plate - Disc: Removal - Refitting

K9K, and TL4

II - REFITTING OPERATION FOR PART CONCERNED

a Position the clutch plate.

a Centre the clutch plate using the (Emb. 1780).

a Tighten to torque and in order the clutch pressure plate bolts (12 N.m).

a Position the clutch plate with the section (10) against the flywheel.

III - FINAL OPERATION

a Remove the (Mot. 582-01) then the (Emb. 1780).

The thrust bearing is connected to the clutch slave cylinder.

REMOVAL

I - REMOVAL PREPARATION OPERATION
a) Drain the brake reservoir using a syringe to remove the clutch thrust bearing and control.

II - REMOVAL OF PART CONCERNED
a) Remove the two clutch thrust bearing mounting bolts (1) on the clutch housing.
b) Remove the clutch thrust bearing (2).

REFITTING

I - REFITTING PART CONCERNED
a) Refit the clutch thrust bearing (2).
b) Torque tighten the bolts mounting the clutch thrust bearing on the clutch housing (21 Nm) (1).

II - FINAL OPERATION
b) Bleed the clutch control (see Clutch circuit: Bleed (MR 392, 37A, Mechanical component controls)).

WARNING
To avoid damaging the clutch slave cylinder, do not lubricate the clutch shaft.
Never operate the system while the slave cylinder is removed.
CLUTCH

Clutch thrust bearing: Removal - Refitting

---

**REMOVAL**

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
- Disconnect the battery (see Battery) (MR 392, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove:
  - the bolts (1) from the clutch thrust bearing,
  - the clutch thrust bearing.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
  - the new clutch thrust bearing,
  - the bolts (2) from the clutch thrust bearing.

- Torque tighten the clutch thrust bearing bolts (21 Nm).

II - FINAL OPERATION

- Connect the battery (see Battery) (MR 392, 80A, Battery).

---

**Tightening torques**

- **clutch thrust bearing bolts**: 21 Nm

---

1. 1
2. 2
3. TL4
MANUAL GEARBOX

Manual gearbox: Identification

K4J / K4M / K9K / D4F engines are fitted with type JH and JR manual gearboxes. A marking (1) on the gearbox casing indicates:

- **A** Gearbox type
- **B** Gearbox suffix
- **C** Production plant
- **D** Production number

![Diagram]
Manual gearbox oils: Draining - Filling

JH3 2.8
JR5 2.5

**DRAINING**
- Remove the engine undertray mounting bolts.
- Remove the engine undertray.
- Remove the drain plug (1).
- Remove the drain plug (2).

**FILLING**
- It is essential to replace the drain plug seal.
- Refit the drain plug.
Manual gearbox oils: Draining - Filling

1. Remove the filler cap (3).
2. Remove the filler cap (4).
3. Fill up to the level of the opening with oil recommended by the manufacturer (see Manual gearbox oil: Specifications) (Technical Note 6012A, 04, Lubricants).
4. Refit the filler cap.
5. Refit:
   - the engine undertray,
   - the engine undertray mounting bolts.

JH3 109488
JR5 109168
92081
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## Manual Gearbox Specifications

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## Manual Gearbox

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REMOVAL

I - REMOVAL PREPARATION OPERATION

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting).

a For strapping the vehicle (see 02A, Lifting equipment, Vehicle: Towing and lifting).

a Remove:

- the battery (see Battery: Removal - Refitting),
- the battery tray (see ),
- the air inlet duct,
- the air filter unit (see Air filter unit: Removal - Refitting),
- the front wheels (see Wheel: Removal - Refitting),
- the front wheel arch liners (see MR 393 Bodywork, 55A, Exterior protection, Front wheel arch liners: Removal - Refitting),
- the engine undertray.


a Remove:

- the gear control cables from the gearbox by pressing at (A),
- the gearbox control cable sleeve stops by pressing at (B).

a Disconnect the anti-lock braking system connectors.

a Remove:

- the left-hand driveshaft (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).

a IMPORTANT

During this operation, secure the vehicle to the lift with a strap, to avoid any imbalance.

Equipment required

Component jack

Tightening torques

lower gearbox bell housing bolts 44 N.m

upper gearbox bell housing bolts 44 N.m

a IMPORTANT

During this operation, ensure the safety of the operator. Wearing personal protective equipment is recommended.
MANUAL GEARBOX

Manual gearbox: Removal - Refitting

JH3 or JR5

1. Attach the radiator assembly to the upper cross member.
2. Remove the radiator support cross member (see MR 393 Bodywork, 41A, Front lower structure, Radiator support cross member: Removal - Refitting).
3. Remove the engine tie-bar with its reinforcement (see Lower engine tie-bar: Removal - Refitting).
4. Remove:
   - the reverse gear connector (15) on the gearbox,
   - the earth strap (16) from the gearbox.
5. Remove:
   - the starter (see Starter: Removal - Refitting),
   - the TDC sensor,
   - the cover of the Protection and Switching Unit,
   - the injection computer (see Petrol injection computer: Removal - Refitting),
   - the computer bracket mounting bolts,
   - the computer bracket.

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Remove the mounting bolts (7) for the wiring duct on the body.

- Remove the wiring duct.
- Fit a hose clamp between the brake fluid reservoir and the clutch master cylinder.
- Disconnect the clutch slave cylinder by pulling on the clips (8), (9).
- Collect the fluid in a container.
- It is essential to place protective plugs in the ends of the hoses.

Remove:
- the scuttle panel grille (see MR 393 Bodywork, 56A, Exterior protection, Scuttle panel grille: Removal - Refitting).
- the scoop under the scuttle panel grille (see 393 56A, Exterior equipment, Scoop under scuttle panel grille: Removal - Refitting).
- the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting).

Remove:
- the bolts (12) securing the gearbox support.
- the gearbox support.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the upper gearbox bell housing bolts.
- Position the component jack under the gearbox.
Manual Gearbox

Manual gearbox: Removal - Refitting

JH3 or JR5

**Remove:**
- the flywheel cover,
- the lower gearbox bell housing bolts,
- the gearbox mounting studs,
- the gearbox.

**Refitting**

I - Refitting Preparation Operation

a. Check that the engine / gearbox centering rings are present and correctly positioned.

II - Refitting Operation for Part Concerned

a. Refit:
- the gearbox,
- the gearbox mounting studs,
- the lower gearbox bell housing bolts.

**WARNING**

- Do not grease:
  - the transmission output shaft, so as not to damage the clutch slave cylinder,
  - the clutch shaft splines.

**Note:**

- To void leaks, the clutch slave cylinder must always be replaced after the clutch pressure plate is replaced;
- Always replace the right-hand driveshaft circlip whenever it is removed.
- It is essential to replace the differential seals with new ones every time the driveshafts are removed.
Manual Gearbox: Removal - Refitting

JH3 or JR5

- the lower gearbox bell housing bolts,
- the flywheel cover.

- Tighten to torque the lower gearbox bell housing bolts (44 N.m).
- Remove the component jack from underneath the gearbox.
- Refit the upper gearbox bell housing bolts.
- Tighten to torque the upper gearbox bell housing bolts (44 N.m).

III - FINAL OPERATION

- Refit:
  - the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting),
  - the scoop under the scuttle panel grille (see 393 56A, Exterior equipment, Scoop under scuttle panel grille: Removal - Refitting).
  - the scuttle panel grille (see MR 393 Bodywork, 56A, Exterior protection, Scuttle panel grille: Removal - Refitting).

- It is essential to remove the protective plugs from the ends of the hoses.

- Connect the clutch slave cylinder.

- Remove the hose clamp between the brake fluid reservoir and the clutch master cylinder.

- Refit:
  - the wiring channel on the body,
  - the mounting bolts for the wiring duct on the body,
  - the earth strap on the gearbox,
  - the computer mounting,
  - the computer bracket mounting bolts bolts,
  - the injection computer (see Petrol injection computer: Removal - Refitting),
  - the reverse gear connector on the gearbox,
  - the cover of the Protection and Switching Unit,
  - the TDC sensor,
  - the starter (see Starter: Removal - Refitting),
  - the engine tie-bar with its reinforcement (see Lower engine tie-bar: Removal - Refitting),
  - the radiator support cross member (see MR 393 Bodywork, 41A, Lower front structure, Radiator support cross member: Removal - Refitting).

- Detach the radiator assembly from the upper cross member.

- Refit:
  - the left-hand driveshaft (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting),
  - the right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting).

- Connect the ABS sensor connectors.

- Connect:
  - the gearbox control cable sleeve stops on the gearbox,
  - the gear control cables to the gearbox.


- Refit:
  - the engine undertray,
  - the front wheel arch liners (see MR 393 Bodywork, 55A, Exterior protection, Front wheel arch liners: Removal - Refitting),
  - the front wheels (see Wheel: Removal - Refitting),
  - the air filter unit (see Air filter unit: Removal - Refitting),
  - the air inlet duct,
  - the battery tray (see Battery: Removal - Refitting),
  - the battery (see Battery: Removal - Refitting).
21A
MANUAL GEARBOX
Manual gearbox: Removal - Refitting
K9K, and TL4

REMOVAL
I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see
  Vehicle: Towing and lifting) (MR 392, 02A, Lifting equip-
  ment).
- Remove:
  - the scoop under the scuttle panel grille (see
    Scoop under the scuttle panel grille: Removal - Refit-
    ting) (MR 393, 56A, Exterior equipment),
  - the battery (see
    Battery: Removal - Refitting) (MR 392, 80A, Battery),
  - the battery tray (see
    Battery tray: Removal - Re-
    fitting) (MR 392, 80A, Battery),
  - the air filter unit (see
    Air filter unit: Removal - Re-
    fitting) (MR 392, 12A, Fuel mixture).
  - the front wheels (see
    Wheel: Removal - Refitting)
    (MR 392, 35A, Wheels and tyres),
  - the front section of the front wheel arch liners (see
    Front wheel arch liner: Removal - Refitting) (MR
    393, 55A, Exterior protection).
  - the engine undertray,
  - the front bumper (see
    Front bumper: Removal -
    Refitting) (MR 393, 55A, Exterior protection),
- Drain the gearbox (see
  21A, Manual gearbox
  Manual gearbox oils: Draining - Filling, page
  21A-3).
- Remove:
  - the front left-hand driveshaft (see
    29A, Drive-
    shafts, Front left-hand driveshaft: Removal -
    Refitting, page
    29A-2),
  - the front right-hand driveshaft (see
    29A, Drive-
    shafts, Front right-hand driveshaft: Removal -
    Refitting, page
    29A-9).
- Remove:
  - the side stiffener bolts (1),
  - the front axle sub-frame front left-hand bolt (2),
  - the tie-rod bolt (3),
  - the tie rod (4).

Special tooling required
Mot. 1453
Engine anchorage support
with multiple adjustments and
retaining straps.

Bvi. 1718
Component support plate for
removal - refitting of gear-
boxes.

Equipment required
safety strap(s)
component jack

Tightening torques
m
uts on the studs
44 Nm

gearbox bolts
44 Nm

exhaust strut bolt on the
gearbox
21 Nm

exhaust strut nut on the
gearbox
21 Nm

exhaust strut bolt on the
catalytic converter
21 Nm

front axle subframe front
left-hand bolt
105 Nm

tie-rod bolt
21 Nm

side stiffener bolts
21 Nm

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a. Remove:
   - the earth wiring bolt (5),
   - the bolt (6) from the heating element and coolant pump support on the radiator mounting cross member.

b. Disconnect the connector (7) from the heating element unit.

c. Move the heating element and coolant pump support on the radiator mounting cross member to one side.

d. Undo the radiator mounting cross member bolts (see Radiator mounting cross member: General description) (MR 393, 41A, Lower structure).

1. Attach the « cooling radiator - fan unit » assembly to the upper cross member using a safety strap(s).

e. Remove the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (MR 393, 41A, Front lower structure).

f. Remove the rear suspended engine mounting (see Lower engine tie-bar: Removal - Refitting) (MR 392, 19D, Engine mounting).

g. Remove the front axle sub-frame (see Front axle subframe: Removal - Refitting) (MR 392, 31A, Front axle components).

IMPORTANT

- Having already removed the driveshafts, remove the front axle subframe without removing the lower ball joint nuts.
Manual gearbox: Removal - Refitting K9K, and TL4

Remove the earth wiring bolt (8).

Remove:
- the bolt and the nut (9) on the gearbox,
- the bolt (10) on the catalytic converter,
- the exhaust strut (11).

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Note:
Before removing the earth terminal, mark its position using an indelible marker by drawing a line on the earth terminal and on the gearbox casing.

When reassembling, improper positioning of the earth terminal on the gearbox casing could result in damage to the earth terminal or earth wiring.
Manual gearbox: Removal - Refitting

1. Disconnect the connector (12) from the diesel injector.
2. Remove the bolt (13) from the diesel injector wiring harness strut.
3. Move the diesel injector wiring harness strut to one side.
4. Unclip:
   - the gear control cables (14) from the gearbox using an open ended wrench,
   - the gear control cable sleeve stops (15) from the gearbox,
   - the expansion bottle (see Expansion bottle: Removal - Refitting) (MR 392, 19A, Cooling).
5. Remove the bolt (16) from the wiring harness channel on the gearbox.
6. Remove the wiring harness channel.
 MANUAL GEARBOX
Manual gearbox: Removal - Refitting
K9K, and TL4

- Remove:
  - the starter (see Starter: Removal - Refitting) (MR 392, 16A, Starting - Charging),
  - the engine speed and position sensor (see Crankshaft position sensor: Removal - Refitting) (MR 392, 13B, Diesel injection).
  - Disconnect the coolant temperature sensor.
  - Remove the injection computer (see Diesel injection computer: Removal - Refitting) (MR 392, 13B, Diesel injection).
  - Remove the wiring channel bolts (17) on the body.
  - Remove:
    - the computer supporting bracket,
    - the wiring channel.
  - Fit a hose clamp between the brake fluid reservoir and clutch master cylinder.
  - Disconnect the connector (18) from the reversing sensor.
  - Disconnect the clutch slave cylinder by pressing on the clip (19).
  - It is essential to place protective plugs in the ends of the hoses.
  - Unclip the breather pipe from the gearbox on the engine.

- Fit:
  - the (Mot. 1453)

**WARNING**
Do not pull on the clip, any incorrect handling of the clip will mean that the clutch control pipes will have to be replaced.
MANUAL GEARBOX
Manual gearbox: Removal - Refitting
K9K, TL4

- the safety strap(s).

- Remove the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting (MR 392, 19D, Engine mounting)).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove:
  - the gearbox nuts (23),
  - the gearbox bolts (24),
  - the gearbox studs (25).

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Fit the (Bvi. 1718) on a component jack.

Fit:
- the (Bvi. 1718) and the component jack under the gearbox,
- the bracket (26) using the nuts (27),
- the support (28),
- the pin (29),
- the rod (30) using the bracket (31) and the bolt (32).

Tighten the rod (30) anti-clockwise in order to avoid tilting the gearbox.

Remove the gearbox using the (Bvi. 1718).

**REFITTING**

I - REFITTING PREPARATION OPERATION

Remove:
- the clutch hydraulic slave cylinder bolts (33),
- the clutch hydraulic slave cylinder (34).

Check that the engine-gearbox centering rings are in place and correctly positioned.

**WARNING**

To avoid damaging the clutch slave cylinder, do not coat the gearbox output shaft with grease.

**WARNING**

Do not grease the clutch shaft splines.

**WARNING**

To prevent leaks, replace the slave cylinder after replacing the clutch pressure plate.

**WARNING**

It is essential to replace the differential output lip seal each time the driveshafts are removed.
Pre-fill the hydraulic slave cylinder using a syringe.

Position the new clutch hydraulic slave cylinder.

Refit the bolts for the clutch hydraulic slave cylinder.


Replacing the gearbox

Fit the new gearbox on the (Bvi. 1718).

II - REFITTING OPERATION FOR PART CONCERNED

Refit the gearbox using the (Bvi. 1718).

Refit the gearbox studs.

Fit without tightening:
- the gearbox bolts,
- the nuts on the studs.

Remove the (Bvi. 1718).

Tighten to torque:
- the nuts on the studs (44 Nm),
- the gearbox bolts (44 Nm).

III - FINAL OPERATION

Connect:
- the hydraulic slave cylinder,
- the reverse gear connector.

Remove the hose clamp.

Bleed the hydraulic clutch control (see Clutch circuit: Bleed) (MR 392, 37A, Mechanical component controls).

Refit:
- the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (MR 392, 19D, Engine mounting),
- the (Mot. 1453),
- the safety strap(s).

Clip the breather pipe from the gearbox on the engine.

Fit:
- the computer supporting bracket,
Manual Gearbox: Removal - Refitting

K9K, and TL4

21A - the wiring harness channel on the body.

Refit:
- the wiring channel bolts on the body,
- the diesel injection computer (see Diesel injection computer: Removal - Refitting) (MR 392, 13B, Diesel injection),
- connect the coolant temperature sensor.
- refit:
- the engine speed and position sensor (see Crankshaft position sensor: Removal - Refitting) (MR 392, 13B, Diesel injection).
- the starter (see Starter: Removal - Refitting) (MR 392, 16A, Starting - Charging),
- the wiring harness channel mounting on the gearbox.
- clip:
- the expansion bottle (see Expansion bottle: Removal - Refitting) (MR 392, 19A, Cooling).
- the gearbox control cable sleeve stops on the gearbox,
- the control cables onto the gearbox.
- fit the diesel injector wiring harness strut.
- connect the diesel injector wiring harness strut bolt.
- connect the diesel injector connector.
- fit the exhaust strut.
- fit without tightening the exhaust strut bolts and nut.
- tighten to torque:
  - the exhaust strut bolt on the gearbox (21 Nm),
  - the exhaust strut nut on the gearbox (21 Nm),
  - the exhaust strut bolt on the catalytic converter (21 Nm).

Refit:
- the tie rod,
- the front axle subframe front left-hand bolt,
- the tie-rod bolt,
- the side stiffener,
- the side stiffener bolts,
- tighten to torque:
  - the front axle subframe front left-hand bolt (105 Nm),
  - the tie-rod bolt (21 Nm),
  - the side stiffener bolts (21 Nm).

The earth wiring must be refit as shown in the illustration.

Refit the earth wiring bolt (35) to the manual gearbox.

Tighten the earth wiring bolt (35) on the manual gearbox.

Note:
Refit the earth terminal, aligning the indelible marks on the gearbox casing.
When reassembling, improper positioning of the earth terminal on the gearbox casing could result in damage to the earth terminal or earth wiring.
Refit:
- the front axle subframe (see Front axle subframe: Removal - Refitting (MR 392, 31A, Front axle components).
- the rear suspended engine mounting (see Lower engine tie-bar: Removal - Refitting) (MR 392, 19D, Engine mounting).
- the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (MR 393, 41A, Front lower structure).

Detach the « cooling radiator - fan unit » assembly from the upper cross member.

Position the heating element and electric coolant pump mounting on the radiator mounting cross member.

Refit:
- the bolt from the heating element and coolant pump support on the radiator mounting cross member.
- the earth wiring bolt.
- Connect the connector to the heating element unit.

Refit:
- the front right-hand driveshaft (see Drive-shafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).
- the front left-hand driveshaft (see Drive-shafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).

Top up the gearbox (see Manual gearbox, Manual gearbox oils: Draining - Filling, page 21A-3).

Refit:
- the front bumper (see Front bumper: Removal - Refitting) (MR 393, 55A, Exterior protection).
- the engine undertray.
- the front section of the front wheel arch liners (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection).
- the front wheels (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture).
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery).
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment).
21A - MANUAL GEARBOX

Manual gearbox: Removal - Refitting

F4R, and 830, and TL4

REMOVAL

I - REMOVAL PREPARATION OPERATION

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

a Use the lifting eye on the gearbox side and its mounting bolts (see Lifting eyes: Removal - Refitting) (MR 392, 11A, Top and front of engine).

a Disconnect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

a Unclip the breather pipe from the gearbox.

a Remove:
   - the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture).
   - the battery tray bracket (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
   - the front wheels (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
   - the front bumper (see Front bumper: Removal - Refitting) (MR 393, 55A, Exterior protection).

a Drain the gearbox (see ).

a Remove the left-hand and right-hand driveshafts (see Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).

a Strap the cooling unit in place.

a Remove:
   - the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (MR 393, 41A, Front lower structure).
   - the front axle sub-frame (see Front axle sub-frame: Removal - Refitting) (MR 392, 31A, Front axle components).

a Remove the earth strap mounting bolt ( ).

Special tooling required

Mot. 1453
Engine anchorage support with multiple adjustments and retaining straps.

Bvi. 1718
Component support plate for removal - refitting of gearboxes.

Equipment required

Component jack

Tightening torques

- Gearbox bell housing mounting bolts: 44 Nm
- Gearbox bell housing mounting nuts: 44 Nm
- Starter mounting bolts: 40 Nm

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Manual gearbox: Removal - Refitting

1. Unclip the gearbox controls (2).
2. Disconnect:
   - the connector (3) from the reverse gear switch,
   - the pipe (4) from the clutch slave cylinder by pushing on the clip (5).
3. Fit the lifting eye on the gearbox side (see Lifting eyes: Removal - Refitting) (MR 392, 11A, Top and front of engine).
4. Remove the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment).

II - OPERATION FOR REMOVAL OF PART CONCERNED
1. Remove the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (MR 392, 19D, Engine mounting).
Remove:
- the starter mounting bolts,
- the gearbox bell housing mounting nuts,
- the gearbox bell housing mounting bolts, leaving one mounting bolt in place,
- the gearbox mounting studs.

Fit the [Bvi. 1718] on a component jack.
Manual gearbox: Removal - Refitting

F4R, and 830, and TL4

Fit:
- the \( \text{Bvi. 1718} \) and the component jack under the gearbox,
- the bracket (6) using mounting nuts (7),
- the support (8),
- the pin (9),
- the rod (10) using the bracket (11) and the mounting bolt (12).

Tighten the rod (10) in an anti-clockwise direction to prevent the gearbox from tilting.

Remove:
- the remaining gearbox bell housing mounting bolt,
- the gearbox using the \( \text{Bvi. 1718} \).

REFITTING

I - REFITTING PREPARATIONS


Refit the gearbox mounting studs.

Check the condition of the centring devices on the gearbox.

II - REFITTING OPERATION FOR PART CONCERNED

Position the gearbox using the \( \text{Bvi. 1718} \).

Refit one gearbox bell housing mounting bolt.

Remove the \( \text{Bvi. 1718} \) from the gearbox.

Refit:
- the gearbox bell housing mounting bolts,
- the gearbox bell housing mounting nuts,
- the starter mounting bolts.

Torque tighten:
- the gearbox bell housing mounting bolts (44 Nm),
- the gearbox bell housing mounting nuts (44 Nm),
- the starter mounting bolts (40 Nm).

Refit the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (MR 392, 19D, Engine mounting).

WARNING
Do not grease the clutch shaft splines.

WARNING
To prevent leaks, replace the slave cylinder after replacing the clutch pressure plate.

WARNING
It is essential to replace the differential output lip seal each time the driveshafts are removed.
Manual gearbox: Removal - Refitting
F4R, and 830, and TL4

- Remove:
  - the \( \text{(Mot. 1453)} \),
  - the lifting eye on the gearbox side (see Lifting eyes: Removal - Refitting) (MR 392, 11A, Top and front of engine).
  - Connect the clutch slave cylinder pipe.
  - Refit the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment).
  - Bleed the hydraulic clutch system (see Clutch circuit: Bleed) (MR 392, 37A, Mechanical component controls).
  - Connect the reverse gear switch connector.
  - Clip the gear controls into place.
  - Refit the earth strap and its mounting bolt.

III - FINAL OPERATION.

- Refit:
  - the front axle sub-frame (see Front axle sub-frame: Removal - Refitting) (MR 392, 31A, Front axle components).
  - the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (MR 393, 41A, Front lower structure).
  - Remove the retaining belt from the cooling unit.
  - Refit:
    - the front bumper (see Front bumper: Removal - Refitting) (MR 393, 55A, Exterior protection),
    - the left-hand and right-hand driveshafts (see Driveshafts, Front right-hand driveshaft: Removal - Refitting),
    - the front wheels (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
    - the battery tray bracket (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
    - the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture).
  - Clip the breather pipe onto the gearbox.
  - Fill the gearbox (see ).
  - Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
REMOVAL
I - REMOVAL PREPARATION OPERATION
a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
a Remove the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).
a Remove:
- the battery tray bracket (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)),
- the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture)),
- the front wheels (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)),
- the front section of the front wheel arch liners (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Exterior protection)),
- the front bumper (see Front bumper: Removal - Refitting (MR 393, 55A, Exterior protection)),
ap Drain the gearbox (see ).
ap Remove the left-hand and right-hand driveshafts (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9) and (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).
ap Attach the cooling assembly using a safety strap(s).
ap Remove:
- the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting (MR 393, 41A, Front lower structure)),
- the front axle sub-frame (see Front axle sub-frame: Removal - Refitting (MR 392, 31A, Front axle components)),
ap Remove the earth wiring bolt (1).

Special tooling required
Mot. 1453
Engine anchorage support with multiple adjustments and retaining straps.
Bvi. 1718
Component support plate for removal - refitting of gearboxes.
Equipment required
Safety strap(s)
Component jack
Tightening torques
m gearbox bell housing bolts 44 Nm
m gearbox bell housing nuts 44 Nm
Unclip the gearbox controls (1).

Remove the wiring harness channel bolts.

Disconnect:
- the connector (2) from the reverse gear switch,
- the downstream oxygen sensor connector,
- the clutch control pipes (3) by pushing on the clip (4).

Remove:
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment).
MANUAL GEARBOX
Manual gearbox: Removal - Refitting
M4R, and TL4

21A - the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment).

a Disconnect the union (6) from the brake servo pipe on the vacuum pump.

a Position the (Mot. 1453) (7).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Remove the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting (MR 392, 19D, Engine mounting).

a Remove:
- the starter bolts (see Starter: Removal - Refitting (MR 392, 16A, Starting - Charging),
- the gearbox nuts,
- the gearbox bolts, leaving one bolt in place,
- the gearbox studs.

a Unclip the breather pipe from the gearbox.

a Fit the (Bvi. 1718) on a component jack.

WARNING
Do not deform the air conditioning pipes.

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Manual Gearbox: Removal - Refitting

- Fit the component jack under the gearbox.
- Fit the bracket (8) using the nuts (9), tapping the hole (14) with a self-tapping bolt (Part no: 77 03 002 244) to attach the gearbox to the support using the rod (12).
- Fit the shim (10), the rod (12) using the bracket (13) and the bolt (14).
- Tighten the rod (12) in an anti-clockwise direction to prevent the gearbox from tilting.
Remove:
- the gearbox bolt,
- the gearbox using the (Bvi. 1718).

**REFITTING**

**I - REFITTING PREPARATIONS OPERATION**

- Refit the gearbox studs.
- Check the condition of the centring devices on the gearbox.

**II - REFITTING OPERATION FOR PART CONCERNED**

- Position the gearbox using the (Bvi. 1718).
- Refit a gearbox bell housing bolt,
- Remove the (Bvi. 1718) from the gearbox.
- Refit:
  - the gearbox bell housing bolts,
  - the gearbox bell housing nuts,
  - the starter bolts (see Starter: Removal - Refitting (MR 392, 16A, Starting - Charging))
- Torque tighten:
  - the gearbox bell housing bolts (44 Nm)
  - the gearbox bell housing nuts (44 Nm)
- Refit the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting (MR 392, 19D, Engine mounting))
- Remove the (Mot. 1453).
- Refit the hose connected to the brake servo.
- Connect the clutch slave cylinder pipe.
- Refit:
  - the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment))
  - the scuttle panel grille (see Scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment))
- Bleed the hydraulic clutch system (see Clutch circuit: Bleed (MR 392, 37A, Mechanical component controls))
- Connect the reverse gear switch connector.
- Clip the gear controls into place.
- Refit:
  - the wiring harness channel bolt,
  - the earth wiring fitted with its bolt.
- Reposition the downstream oxygen sensor connector.

**Note:**
Check that the pulleys on the accessories side are not pressing against the side member on the right-hand side of the vehicle when the engine and transmission assembly is being lowered.

**WARNING**
- Do not grease the clutch shaft splines.
- To prevent leaks, replace the slave cylinder after replacing the clutch pressure plate.
- It is essential to replace the differential output lip seal each time the driveshafts are removed.
Refit:
- the subframe (see 31A, Front axle component, Front axle subframe: Removal-Refitting),
- the radiator mounting cross member (see MR 393 Bodywork, 41A, Lower structure, Radiator mounting cross member: Removal - Refitting).

Remove the safety strap(s) from the cooling unit.

Removal:
- the front bumper (see Front bumper: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the left-hand and right-hand driveshafts (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting),
- the front wheels (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the battery tray bracket (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- Clip the breather pipe onto the gearbox.
- Top up the gearbox.
- Refit the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
I - REMOVAL PREPARATION OPERATION

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (02A, Lifting equipment).

a Remove:
- the engine undertray bolts,
- the engine undertray,
- the front wheels (see Wheel: Removal - Refitting) (35A, Wheels and tyres),
- the front wheel arch liners (see Front wheel arch liner: Removal - Refitting) (55A, Exterior protection),
- the front bumper (see Front bumper: Removal - Refitting) (55A, Exterior protection),
- the windscreen wiper arms (see Windscreen wiper arm: Removal - Refitting) (85A, Wiping - Washing),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (56A, Exterior equipment),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (56A, Exterior equipment).

a Drain the gearbox (see Manual gearbox, Manual gearbox oils: Draining - Filling, page 21A-3).

a Remove:
- the front right-hand driveshaft (see Drive-shafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9),
- the front left-hand driveshaft (see Drive-shafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2),
- the differential output seals (see Manual gearbox, Differential output seal: Removal - Refitting, page 21A-46),
- the air resonator (see Air resonator: Removal - Refitting) (12A, Fuel mixture),
- the battery (see Battery),
- the battery tray (see Battery tray: Removal - Refitting) (80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (12A, Fuel mixture),
- the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (41A, Front lower structure),
- the starter (see Starter: Removal - Refitting) (16A, Starting - Charging),
- the lower engine tie-bar (see Lower engine tie-bar: Removal - Refitting) (19D, Engine mounting),
- the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (19D, Engine mounting).

Special tooling required
Ms. 583 Pipe clamps.
Bvi. 1718 Component support plate for removal - refitting of gearboxes.

Equipment required
indelible pencil
component jack

Tightening torques
m gearbox nuts 44 N.m
gearbox bolts 44 N.m
front left-hand bolt of the front axle sub-frame 105 N.m
ear th wiring bolt on the gearbox 24 N.m
Unclip:
- the gear control cables (1) from the selector ball joints using an open-jawed spanner,
- the gear control cables (2) from their support.

Fit the tool (Ms. 583) between the brake fluid reservoir and the clutch master cylinder.

Disconnect:
- the hydraulic clutch control pipe by pressing on the clip (3),
- the connector (4) from the reverse gear switch,
- Insert the blanking plugs.

WARNING
Do not pull the clip. If it is incorrectly handled in any way, the pipe will need to be replaced.
Remove the earth wiring bolt (5).

Remove the bolt (6) from the wiring harness channel on the gearbox.

Disconnect the breather pipe (7) from the gearbox.

Remove the crankshaft position sensor (see Crankshaft position sensor: Removal - Refitting).

Loosen the front left-hand bolt (8) on the front axle subframe.

Pivot the tie rod at (9).

Note: Before removing the earth terminal, mark its position using an indelible pencil by drawing a line on the earth terminal and on the gearbox casing.

When reassembling, improper positioning of the earth terminal on the gearbox casing could result in damage to the earth terminal or earth wiring.
MANUAL GEARBOX
Manual gearbox: Removal - Refitting

K4M, and TL4

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Remove the bolts (10) from the gearbox.

a Fit the (Bvi. 1718) on a component jack.

a Position the tool (Bvi. 1718) and the component jack under the gearbox.

a Tighten the rod (11) anti-clockwise in order to avoid tilting the gearbox.

a Remove:
- the gearbox nuts,
- the gearbox using the tool (Bvi. 1718),
- the clutch thrust bearing (see 20A, Clutch thrust bearing: Removal - Refitting, page 20A-11).

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I - REFITTING PREPARATION OPERATION

- Parts always to be replaced: Clutch thrust bearing.

Check that the centring dowels are in place.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
  - A new clutch thrust bearing (see page 20A-11, Clutch thrust bearing: Removal - Refitting),
  - The gearbox using the tool (Bvi. 1718).

- Remove the tool (Bvi. 1718).

- Tighten to torque:
  - The gearbox nuts (44 N.m),
  - The gearbox bolts (44 N.m).

III - FINAL OPERATION

- Fit the tie-rod.

- Refit the front left-hand bolt on the front axle sub-frame.

- Torque tighten the front left-hand bolt of the front axle sub-frame (105 N.m).

- Refit the crankshaft position sensor (see Crankshaft position sensor: Removal - Refitting).

- Connect the gearbox breather pipe.

- Refit the wiring channel bolt on the gearbox.

- Refit the earth cable respecting the marks made during removal.

- Refit the earth wiring bolt on the gearbox.

- Torque tighten the earth wiring bolt on the gearbox (24 N.m).

- Connect the reverse gear switch connector.

- Remove the blanking plugs.

- Connect the clutch slave cylinder.

- Remove the tool (Ms. 583).

- Clip:
  - The gear control cables onto their support,
  - The gear control cables onto the gear selector ball joints.

- Refit:
  - The left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (19D, Engine mounting),
  - The lower engine tie-bar (see Lower engine tie-bar: Removal - Refitting) (19D, Engine mounting),
  - The starter (see Starter: Removal - Refitting) (16A, Starting - Charging),
  - The radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (41A, Front lower structure),
  - The air filter unit (see Air filter unit: Removal - Refitting) (12A, Fuel mixture),
  - The battery tray (see Battery tray: Removal - Refitting) (80A, Battery),
  - The battery (see) (80A, Battery),
  - The air resonator (see Air resonator: Removal - Refitting) (12A, Fuel mixture),
  - The differential output seals (see page 21A-46, Manual gearbox, Differential output seal: Removal - Refitting),
  - The front left-hand driveshaft (see Front left-hand driveshaft: Removal - Refitting, page 29A-2),
  - The front right-hand driveshaft (see Front right-hand driveshaft: Removal - Refitting, page 29A-9),
  - The scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (56A, Exterior equipment),
  - The scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (56A, Exterior equipment),
  - The windscreen wiper arms (see Windscreen wiper arm: Removal - Refitting) (85A, Wiping - Washing),
  - The front bumper (see Front bumper: Removal - Refitting) (55A, Exterior protection),
  - The front wheel arch liners (see Front wheel arch liner: Removal - Refitting) (55A, Exterior protection).

WARNING

To avoid damaging the slave cylinder, do not coat the gearbox output shaft with grease.

WARNING

Do not grease the clutch shaft splines.
Manual gearbox: Removal - Refitting

K4M, and TLM

- the front wheels (see Wheel: Removal - Refitting (35A, Wheels and tyres).

Perform the following operations:

- fill the gearbox (see Manual gearbox, Manual gearbox oils: Draining - Filling, page 21A-3),
- bleed the clutch hydraulic clutch (see Clutch circuit: Bleed) (37A, Mechanical component controls).

Refit the engine undertray.
Replace the lip seal after opening the gearbox (see Technical Note 3661A, gearbox JH - JR).
REMOVAL

I - REMOVAL PREPARATION OPERATION

a Remove:
- the clutch thrust bearing (see 20A, Clutch, Clutch thrust bearing: Removal - Refitting, page 20A-11).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Drill a hole in the seal, using a 2.5 mm drill bit.

a Fit a bolt in seal (1).

a Extract the seal (1) using pliers.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a Fit a new seal with its protector using the (Bvi. 1601).

a Remove the protector.

II - FINAL OPERATION

a Refit:
- the clutch thrust bearing (see 20A, Clutch, Clutch thrust bearing: Removal - Refitting, page 20A-11).

Special tooling required

Bvi. 1601
Tool for fitting the primary shaft seal.

WARNING

Do not scratch the shaft or mating face.
MANUAL GEARBOX
Differential output seal: Removal - Refitting

I - REMOVAL PREPARATION OPERATION
a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

a Disconnect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

a Remove:
- the front wheel from the side in question (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres),
- the front brake pads from the side in question (see Front brake pads: Removal - Refitting (MR 392, 31A, Front axle components),
- the engine undertray mounting bolts,
- the engine undertray.


a Remove the driveshaft from the side in question (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2) or (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2)

II - OPERATION FOR REMOVAL OF PART CONCERNED
a Tap the base of the lip seal using a pin punch and a small hammer to release it and cause it to turn in its housing.

a Withdraw the lip seal using a large screwdriver, taking care not to damage the differential housing.

Special tooling required

Bvi. 1666 Tool for fitting differential seals.
Differential output seal: Removal - Refitting

**I - REFITTING OPERATION FOR PART CONCERNED**

1. Refit the seal using (Bvi. 1666) (C), suffix A on the right-hand side, and suffix B on the left-hand side.

2. Strike the (Bvi. 1666) (C) with a copper hammer (D) to fully seat the differential output seal.

**II - FINAL OPERATION.**

1. Position the driveshaft in relation to the sunwheel.
2. Refit the driveshaft on the side in question (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2) or (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2)
4. Refit:
   - the engine undertray,
   - the engine undertray mounting bolts,
   - the front brake pads from the side in question (see Front brake pads: Removal - Refitting) (MR 392, 31A, Front axle components),
   - the front wheel on the side in question (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
   - the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
MANUAL GEARBOX

Differential output seal: Removal - Refitting

REMOVAL

I - REMOVAL PREPARATION OPERATION

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (02A, Lifting equipment).

b Remove:
- the engine undertray bolts,
- the engine undertray.


1 - When replacing the differential output seal on the left-hand side

a Remove:
- the front left-hand wheel (see Wheel: Removal - Refitting) (35A, Wheels and tyres),
- the front left-hand driveshaft (see 29A, Drive-shafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).

2 - When replacing the differential output seal on the right-hand side

a Remove:
- the front right-hand wheel (see Wheel: Removal - Refitting) (35A, Wheels and tyres),
- the front right-hand wheel driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).

II - REMOVAL OPERATION FOR THE DIFFERENTIAL OUTPUT SEAL

Left-hand differential output seal

a Tap the base of the lip seal using a roll pin punch and a small hammer to release it and make it turn in its housing.

b Remove the lip seal using a large screwdriver, taking care not to damage the differential housing.

Right-hand differential output seal

Special tooling required

Bvi. 1854 Differential output seal fitting tool TL4

Equipment required

roll pin punch

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125896
II - REFITTING OPERATION FOR THE DIFFERENTIAL OUTPUT SEAL

Refitting the right-hand side differential output seal

- The new differential output seal is refitted using the tool (Bvi. 1854) (1) consisting of:
  - a mandrel (2) for the right-hand side,
  - a mandrel (3) for the left-hand side.

- Oil the internal surface of the new differential output seal.

- Fit:
  - the new differential output seal on the gearbox,
  - the mandrel (2) or (3) of the tool (Bvi. 1854) on the new differential output seal.

- Tap the tool (1) with a copper hammer to fit the new differential output seal fully.

III - FINAL OPERATION

1 - Refitting the left-hand driveshaft

- Refit:
  - the front left-hand driveshaft (see 29A, Drive-shafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2),
  - the front left-hand wheel (see Wheel: Removal - Refitting) (35A, Wheels and tyres).

2 - Refitting the right-hand driveshaft

- Refit:
  - the front right-hand driveshaft (see 29A, Drive-shafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9),
Differential output seal: Removal - Refitting

- the front right-hand wheel (see Wheel: Removal - Refitting (35A, Wheels and tyres).

3 - Final operation

a Fill the gearbox and check the level (see Manual gearbox, Manual gearbox oils: Draining - Filling, page 21A-3).

a Refit the engine undertray.
Reverse gear switch: Removal - Refitting

**REMOVAL**

I - REMOVAL PREPARATION OPERATION

- Remove:
  - the battery (see Battery: Removal - Refitting)
  - the battery tray (see Battery tray: Removal - Refitting)

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Disconnect the connector (1) from the reverse gear switch.
- Remove the reverse gear switch using the socket for removing/refitting the reverse gear switch (Bvi. 1934) (2).

**REFITTING**

I - REFITTING OPERATION FOR PART CONCERNED

- Refit the reverse gear switch.
- Tighten the reverse gear switch using the socket for removing/refitting the reverse gear switch (Bvi. 1934).
- Connect the reverse gear switch connector.

II - FINAL OPERATION

- Refit:
  - the battery tray (see Battery tray: Removal - Refitting)
  - the battery (see Battery: Removal - Refitting)

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Special tooling required

Bvi. 1934
Socket for removing/refitting reverse gear switch

125695
MANUAL GEARBOX
Reverse gear switch: Removal - Refitting

JH3 or JR5

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (02A, Lifting equipment).
- Remove the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Disconnect the connector (1) from the reverse gear switch.
- Remove the reverse gear switch (2) using the (Bvi. 1934).

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Apply some SILICONE ADHESIVE SEALANT (see Vehicle: Parts and consumables for the repair) (04B, Consumables - Products) to the threading of the reverse gear switch.
- Refit the reverse gear switch using the (Bvi. 1934).
- Torque tighten the reverse gear switch (23 N.m). 
- Connect the reverse gear switch connector.

II - FINAL OPERATION

- Refit the engine undertray.

Note: Seal the housing of the reverse gear switch while replacing the part.

Special tooling required

Bvi. 1934 Socket for removing/refitting reverse gear switch

Tightening torques

- Reverse gear switch 23 N.m

125572
125571
To disconnect the computer, switch off the ignition and wait for 1 minute.

Discharge the pressure accumulator using the Diagnostic tool before any operation on the electro-hydraulic unit.

**WARNING**

If any operation is carried out on the electro-hydraulic unit, it is essential to clean the unit using a cleaning product and compressed air. Never leave the circuit open and never use a high pressure cleaner.
REMOVAL

I - REMOVAL PREPARATION OPERATION

To discharge the accumulator, run command « Discharge pressure accumulator » AC081. To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

Remove:
- the lifting eye nut on the gearbox (1)
- the lifting eye on the gearbox (2).

II - OPERATION FOR REMOVAL OF PART CONCERNED

Remove the pressure accumulator (3) using the (Mot. 445).

IMPORTANT
Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.

Special tooling required
Mot. 445 Oil filter strap wrench.

Equipment required
Diagnostic tool

Tightening torques
m lifting eye nut on the gearbox 21 Nm

"..."
**SEQUENTIAL GEARBOX**

**Pressure accumulator: Removal - Refitting**

**K9K, and JA5**

**REFITTING**

**I - REFITTING OPERATION FOR PART CONCERNED**

- Fit the pressure accumulator.
- Tighten the pressure accumulator using the (Mot. 445).
- Affix the safety label to the pressure accumulator.
- Refit:
  - the lifting eye on the gearbox,
  - the lifting eye nut on the gearbox.

- Tighten to torque the lifting eye nut on the gearbox (21 Nm).
- Refit:
  - the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture).
  - the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
  - the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

**II - FINAL OPERATION.**

- Carry out the necessary programming (see Fault finding - Replacement of components) (MR 394, 21B, Sequential gearbox).

**WARNING**

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil is at the MIN mark.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a To discharge the accumulator, run command « Discharge pressure accumulator » AC081.
To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value.
If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed.
The pressure reading must be close to zero.

a Remove:
- the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)),
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)),
- the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture)).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Remove the pressure accumulator (3) using the Mot. 445.

Special tooling required
Mot. 445 Oil filter strap wrench.
Equipment required
Diagnostic tool
Tightening torques
m lifting eye nut on the gearbox 21 Nm

IMPORTANT
Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.

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REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a) Fit the pressure accumulator.

b) Tighten the pressure accumulator using the (Mot. 445).

c) Affix the safety label to the pressure accumulator.

Refit:
- the lifting eye on the gearbox,
- the lifting eye nut on the gearbox.

Tighten to torque the lifting eye nut on the gearbox (21 Nm).

Refit:
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

II - FINAL OPERATION.

a) Carry out the necessary programming (see Fault finding - Replacement of components) (MR 394, 21B, Sequential gearbox).

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on):
the oil is at the MIN mark.
**REMOVAL**

I - REMOVAL PREPARATION OPERATION

- To discharge the accumulator, run command « Discharge pressure accumulator » AC081.
- To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value.
- If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed.
- The pressure reading must be close to zero.
- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
- Remove the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12).

**II - OPERATION FOR REMOVAL OF PART CONCERNED**

- Remove:
  - the bolts (1) from the pump assembly reservoir,
  - the reservoir (2) from the pump assembly.

**REFITTING**

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
  - the pump assembly reservoir,
  - the pump assembly reservoir bolts.
- Torque tighten the pump assembly reservoir bolts (10 Nm).

**II - FINAL OPERATION**

- Refit the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting).

**Equipment required**

Diagnostic tool

**Tightening torques**

- Pump assembly reservoir bolts: 10 Nm

**IMPORTANT**

Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a. To discharge the accumulator, run command « Discharge pressure accumulator » AC081.
   To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value.
   If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

a. Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

a. Remove the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a. Remove:
   - the bolts (1) from the pump assembly reservoir,
   - the reservoir (2) from the pump assembly.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a. Refit:
   - the pump assembly reservoir,
   - the pump assembly reservoir bolts.

a. Torque tighten the pump assembly reservoir bolts (10 Nm).

II - FINAL OPERATION.

a. Refit the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12).

Equipment required

Diagnostic tool

Tightening torques

pump assembly reservoir bolts 10 Nm

IMPORTANT

Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
1. REMOVAL PREPARATION OPERATION

a) To discharge the accumulator, run command « Discharge pressure accumulator » AC081. To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

b) Position the vehicle on a two-post lift (see Vehicle: Towing and lifting)(MR 392, 02A, Lifting equipment).

equipment required

Diagnostic tool

Note: When replacing the electric pump assembly, always replace the control relay.

IMPORTANT

Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
**SEQUENTIAL GEARBOX**

Electro-hydraulic unit: Removal - Refitting

K9K, and JA5

- **Remove**:  
  - the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12),  
  - the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34).

- **II - OPERATION FOR REMOVAL OF PART CONCERNED**
  - Remove the electro-hydraulic unit.

**REFITTING**

- **I - REFITTING OPERATION FOR PART CONCERNED**
  - Refit:  
    - the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34),  
    - the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12).

- **II - FINAL OPERATION**
  - Carry out the necessary programming (see Fault finding - Replacement of components) (MR 394, 21B, Sequential gearbox).

**WARNING**

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil is at the MIN mark.

**Note:** The electro-hydraulic unit includes the pump assembly and the actuator module.
To discharged the accumulator, run command «Discharge pressure accumulator» AC081. To confirm the pressure drop, read the «Hydraulic pressure» parameter for the resulting value. If there is still pressure in the accumulator, re-run the «Discharge pressure accumulator» command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

Equipment required:
- Diagnostic tool

Note: When replacing the electric pump assembly, always replace the control relay.

IMPORTANT: Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
Sequential Gearbox

Electro-hydraulic unit: Removal - Refitting

D4F, and JA3

Remove:
- the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12),
- the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a

Remove the electro-hydraulic unit.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a

Refit:
- the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34),
- the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12).

II - FINAL OPERATION

a

Carry out the necessary programming (see Fault finding - Replacement of components) (MR 394, 21B, Sequential gearbox).

Note:
The electro-hydraulic unit includes the pump assembly and the actuator module.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on):
- the oil is at the MIN mark.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a To discharge the accumulator, run command « Discharge pressure accumulator » AC081.

To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value.

If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed.

The pressure reading must be close to zero.

Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

Remove:

- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the diesel injection computer (see Diesel injection computer: Removal - Refitting) (MR 392, 13B, Diesel injection),
- the wiring harness nut under the injection computer.

Remove the Protection and Switching Unit bolts (1).

Remove:

- the Protection and Switching Unit,
- the wiring harness under the injection computer.

Special tooling required

Mot. 1453 Engine anchorage support with multiple adjustments and retaining straps.

Equipment required

Diagnostic tool

Safety strap(s)

Tightening moments

- pump assembly lower bolts 24 N.m
- pump assembly upper bolt 24 N.m
- low pressure pump pipe 14 N.m
- high pressure pump pipe 14 N.m

Note: When replacing the electric pump assembly, always replace the control relay.

IMPORTANT

Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
Fit the (Mot. 1453) with a safety strap(s).

Remove:
- the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
- the engine undertray,
- the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (MR 392, 19D, Engine mounting).

Disconnect:
- the connector (2) from the actuator module,
- the connector (3) from the pump assembly.
Pump assembly: Removal - Refitting

K9K, and JA5

Remove:
- the clutch pipe (⁴),
- the clutch pipe bracket (⁵).

Cut the clip on the clutch pipe (⁶).
Sequential Gearbox
Pump assembly: Removal - Refitting

Remove the high pressure pump pipe (7) and (8).
a Remove the low pressure pump pipe (9).

a Disconnect the clutch control pipe (10) on the hydraulic cylinder by pushing on the clip.
Drain the pump assembly reservoir using a syringe.

Remove:
- the earth strap on the pump assembly (11),
- the lower bolts from the pump assembly (12),
- the upper bolt from the pump assembly (13).
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SEQUENTIAL GEARBOX
Pump assembly: Removal - Refitting

K9K, and JA5

a Disconnect the connector from the pump assembly (14).

REFITTING
I - REFITTING OPERATION FOR PART CONCERNED

a Position the pump assembly.
a Refit:
- the pump assembly upper bolt,
- the pump assembly lower bolts,
- the earth strap on the pump assembly.
a Tighten to torque:
- the pump assembly lower bolts (24 N.m),
- the pump assembly upper bolt (24 N.m).
a Connect the clutch control pipe on the hydraulic cylinder.
a Refit:
- the low pressure pump pipe,
- the high pressure pump pipe,
- the clutch pipe,
- the clutch pipe bracket,
- a new clip on the clutch pipe.
a Tighten to torque:
- the low pressure pump pipe (14 N.m),
- the high pressure pump pipe (14 N.m).
a Connect:
- the actuator module connector,
- the pump assembly connector.

a Refit the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting (MR 392, 19D, Engine mounting)).

a Remove the (Mot. 1453) and the safety strap(s).
a Refit:
- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
Sequential gearbox: Removal - Refitting

K9K, and JA5

- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection).

- Connect the electrohydraulic unit connector.

- Fill the oil reservoir (see Sequential gearbox, Sequential gearbox oil: Specifications, page 21B-82) (Technical Note 6012, 04A, Lubricants) to between 32 and 38 mm above the MIN mark.

- Refit:
  - the Protection and Switching Unit,
  - the wiring harness under the injection computer,
  - the diesel injection computer (see Diesel injection computer: Removal - Refitting) (MR 392, 13B, Diesel injection),
  - the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
  - the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
  - the air filter box (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
  - the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
  - the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
  - the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
  - the engine undertray.

Final operation

- Perform the following operations:
  - bleed the clutch circuit (see Sequential gearbox, Sequential gearbox: Bleeding, page 21B-84),
  - the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox).

Warning

After the accumulator has been fully filled (15 seconds after the ignition has been switched on):

- the oil is at the MIN mark.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a) To discharge the accumulator, run command «Discharge pressure accumulator» AC081.

b) To confirm the pressure drop, read the «Hydraulic pressure» parameter for the resulting value.

c) If there is still pressure in the accumulator, re-run the «Discharge pressure accumulator» command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed.

The pressure reading must be close to zero.

a) Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

a) Remove:

- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the diesel injection computer (see Diesel injection computer: Removal - Refitting) (MR 392, 13B, Diesel injection),
- the wiring harness nut under the injection computer.

a) Remove the Protection and Switching Unit bolts (1). 

a) Remove:

- the Protection and Switching Unit,
- the wiring harness under the injection computer.

Special tooling required

- Mot. 1453 Engine anchorage support with multiple adjustments and retaining straps.

Equipment required

- Diagnostic tool
- Safety strap(s)

Tightening torques

- Pump assembly lower bolts: 24 N.m
- Pump assembly upper bolt: 24 N.m
- Low pressure pump pipe: 14 N.m
- High pressure pump pipe: 14 N.m

Note:

When replacing the electric pump assembly, always replace the control relay.

IMPORTANT

Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.

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SEQEUNENTIAL GEARBOX

Pump assembly: Removal - Refitting

D4F, and JA3

Fit the (Mot. 1453) with a safety strap(s).

Remove:
- the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
- the engine undertray,
- the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (MR 392, 19D, Engine mounting).

Disconnect:
- the connector (2) from the actuator module,
- the connector (3) from the pump assembly.
a Remove:
- the clutch pipe (4),
- the clutch pipe bracket (5).

a Cut the clip on the clutch pipe (6).
a Remove the high pressure pump pipe (7) and (8).
21B

21B

Sequential Gearbox

Pump Assembly: Removal - Refitting

D4F, and JA3

21B

a

Remove the low pressure pump pipe (9).

a

Disconnect the clutch control pipe (10) on the hydraulic cylinder by pushing on the clip.
DRAIN the pump assembly reservoir using a syringe.

- Remove:
  - the earth strap on the pump assembly (11),
  - the lower bolts from the pump assembly (12),
  - the upper bolt from the pump assembly (13).
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SEQUENTIAL GEARBOX
Pump assembly: Removal - Refitting
D4F, and JA3

**DISCONNECT**
- Disconnect the connector from the pump assembly (14).

**REFITTING**
1. **REFITTING OPERATION FOR PART CONCERNED**
   - Position the pump assembly.
   - Refit:
     - the pump assembly upper bolt,
     - the pump assembly lower bolts,
     - the earth strap on the pump assembly.
   - Tighten to torque:
     - the pump assembly lower bolts (24 N.m),
     - the pump assembly upper bolt (24 N.m).
   - Connect the clutch control pipe on the hydraulic cylinder.
   - Refit:
     - the low pressure pump pipe,
     - the high pressure pump pipe,
     - the clutch pipe,
     - the clutch pipe bracket,
     - a new clip on the clutch pipe.
   - Tighten to torque:
     - the low pressure pump pipe (14 N.m),
     - the high pressure pump pipe (14 N.m).
   - Connect:
     - the actuator module connector,
     - the pump assembly connector.

2. Refit the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (MR 392, 19D, Engine mounting).
3. Remove the (Mot. 1453) and the safety strap(s).
4. Refit:
   - the side stiffener bolts on the left-hand side of the vehicle,
   - the side stiffener on the left-hand side of the vehicle.
Pump assembly: Removal - Refitting

- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection).

a) Connect the electrohydraulic unit connector.

a) Fill the oil reservoir (see Sequential gearbox, Sequential gearbox oil: Specifications, page 21B-82) (Technical Note 6012, 04A, Lubricants) to between 32 and 38 mm above the MIN mark.

a) Refit:
- the Protection and Switching Unit,
- the wiring harness under the injection computer,
- the diesel injection computer (see Diesel injection computer: Removal - Refitting) (MR 392, 13B, Diesel injection),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the air filter box (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- the engine undertray.

II - FINAL OPERATION

a) Perform the following operations:
- bleed the clutch circuit (see Sequential gearbox, Sequential gearbox: Bleeding, page 21B-84)
- the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox).

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil is at the MIN mark.
I - REMOVAL PREPARATION OPERATION

To discharge the accumulator, run command « Discharge pressure accumulator » AC081. To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

Remove the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34).

II - OPERATION FOR REMOVAL OF PART CONCERNED

Remove:
- the bracket bolts on the actuator module (1),
- the actuator module bracket (2).

Equipment required
Diagnostic tool

Tightening torques
- solenoid valve bolts
- bracket bolts on the actuator module

m

Note:
Before removing the solenoid valves, always mark their respective connectors in order not to mix them up.

IMPORTANT
Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
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SEQUENTIAL GEARBOX

Solenoid valves: Removal - Refitting
K9K, and JA5

Remove the solenoid valve affected, following the correct removal order for the solenoid valves:
- (1) Clutch solenoid valve
- (2) Selection solenoid valve 4
- (3) Selection solenoid valve 3
- (4) Engagement solenoid valve 1

REFITTING

I - REFITTING PREPARATION OPERATION

Refit the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34).

II - REFITTING OPERATION FOR PART CONCERNED

Refit:
- the solenoid valve affected,
- the bolts from the solenoid valve,
- the actuator module bracket.

Tighten to torque:
- the solenoid valve bolts (4 N.m),
- the bracket bolts on the actuator module (4 N.m).

III - FINAL OPERATION

Perform the following operations:
- bleed the clutch circuit (see 21B, Sequential gearbox, Sequential gearbox: Bleeding, page 21B-84)
- the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox).

Note:
Remove engagement solenoid valve 2 (5) independently of the other solenoid valves.

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on):
- the oil is at the MIN mark.
I - REMOVAL PREPARATION OPERATION

a To discharge the accumulator, run command « Discharge pressure accumulator » AC081.

To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value.
If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed.

The pressure reading must be close to zero.

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

a Remove the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Remove:
- the bracket bolts on the actuator module (1),
- the actuator module bracket (2).

Equipment required
Diagnostic tool

Tightening torques
solenoid valve bolts 4 N.m
bracket bolts on the actuator module 4 N.m

Note:
Before removing the solenoid valves, always mark their respective connectors in order not to mix them up.

IMPORTANT
Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.

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Sequential Gearbox Solenoid valves: Removal - Refitting

21B

Remove the solenoid valve affected, following the correct removal order for the solenoid valves:

- (1) Clutch solenoid valve
- (2) Selection solenoid valve 4
- (3) Selection solenoid valve 3
- (4) Engagement solenoid valve 1

REFITTING

I - REFITTING PREPARATION OPERATION

Refit the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34).

II - REFITTING OPERATION FOR PART CONCERNED

Refit:
- the solenoid valve affected,
- the bolts from the solenoid valve,
- the actuator module bracket.

Tighten to torque:
- the solenoid valve bolts (4 N.m),
- the bracket bolts on the actuator module (4 N.m).

III - FINAL OPERATION

Perform the following operations:
- bleed the clutch circuit (see 21B, Sequential gearbox, Sequential gearbox: Bleeding, page 21B-84),
- the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox).

Note:
Remove engagement solenoid valve 2 (5) independently of the other solenoid valves.

WARNING
After the accumulator has been fully filled (15 seconds after the ignition has been switched on):
- the oil is at the MIN mark.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a) Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

b) Disconnect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

c) Remove the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a) Disconnect the engagement sensor connector.

b) Remove:
   - the engagement sensor bolts,
   - the engagement sensor (1).

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a) Refit:
   - the engagement sensor,
   - the engagement sensor bolts.

b) Tighten to torque the engagement sensor bolts (4 Nm).

a) Connect the engagement sensor connector.

II - FINAL OPERATION

a) Connect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

b) Refit the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)).

c) Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox)).
**Removal**

I - Removal Preparation Operation

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
- Disconnect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).
- Remove the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)).

II - Operation for Removal of Part Concerned

- Disconnect the engagement sensor connector.
- Remove:
  - the engagement sensor bolts,
  - the engagement sensor (1).

**Refitting**

I - Refitting Operation for Part Concerned

- Refit:
  - the engagement sensor,
  - the engagement sensor bolts.
- Tighten to torque the engagement sensor bolts (4 Nm).
- Connect the engagement sensor connector.

II - Final Operation.

- Connect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).
- Refit the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)).
- Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox)).

**Warning**

After the accumulator has been fully filled (15 seconds after the ignition has been switched on):

- the oil is at the MIN mark.
### Sequential Gearbox

**Actuator module: Removal - Refitting**

**K9K, and JA5**

**Special tooling required**

- Mot. 1453
- Engine anchorage support with multiple adjustments and retaining straps.

**Equipment required**

- Diagnostic tool
- Safety strap(s)

**Tightening torques**

- Clutch pipe nuts: 14 Nm
- High pressure pump pipe nuts: 14 Nm
- Gearbox mounting nut: 21 Nm
- Actuator module nuts: 24 Nm
- Bolts mounting the left-hand suspended mounting on the gearbox: 62 Nm
- Stud mounting the left-hand suspended mounting on the gearbox (if it has been changed): 180 Nm
- Bolts mounting the left-hand suspended mounting on the body: 62 Nm
- Gearbox left-hand rubber pad nut: 62 Nm

---

**Diagram:**

- General view
- Actuator module
- Engine anchorage support

---

**Table:**

<table>
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<tr>
<td>4</td>
<td>Selection solenoid valve</td>
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</tbody>
</table>
REMOVAL

I - REMOVAL PREPARATION OPERATION

a To discharge the accumulator, run command « Discharge pressure accumulator » AC081.

To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

a Remove:
   - the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)),
   - the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)),
   - the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture)),
   - the scuttle panel grille (see Scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment)),
   - the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment)),
   - the diesel injection computer (see Diesel injection computer: Removal - Refitting (MR 392, 13B, Diesel injection)),
   - the wiring harness nut under the injection computer.

a Remove the Protection and Switching Unit (9).

a Remove:
   - the Protection and Switching Unit,
   - the wiring harness under the injection computer.

a Fit the (Mot. 1453) with a safety strap(s).

a Remove:
   - the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)),
   - the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Exterior protection)),
   - the side stiffener bolts on the left-hand side of the vehicle,
   - the side stiffener on the left-hand side of the vehicle,
   - the Engagement sensor (20),
   - the Gear selection sensor (7),
   - the Solenoid valve unit pressure sensor (8),
   - the High pressure filter (5),
   - the Electrical system (21).
ACTUATOR MODULE: REMOVAL - REFITTING

K9K, and JA5

21B - the engine undertray.

a

1. Remove:
   - the nut (10) from the gearbox left-hand rubber pad,
   - the bolts (11) from the left-hand suspension on the body,
   - the left-hand suspension from the body,
   - the bolts (12) from the gearbox left-hand suspended mounting,
   - the gearbox left-hand suspended mounting.

2. Disconnect:
   - the connector from the actuator module (13),
   - the connector from the pump assembly (14).

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Remove:
- the clutch pipe (15)
- the clutch pipe bracket (16)
- Cut the clip on the clutch pipe (17)
Remove the high pressure pump pipes (18) and (20).
Sequential Gearbox

Actuator Module: Removal - Refitting

K9K, and JA5

114644

21B

- Remove the low pressure pump pipe (20).

II - Operation for Removal of Part Concerned

- Remove:
  - the lifting eye on the gearbox,
  - the nuts from the actuator module.

Note:
To avoid any sequential gearbox malfunction, mark the routing for the solenoid valve and sensor wiring on the actuator module.

Note:
The actuator module can be removed or refitted with the pressure accumulator in place.
Unlock the gear selector shaft (21) by turning the shaft by a quarter of a turn using a screwdriver.

Disconnect the sequential gearbox sensor connector (22)
Sequential Gearbox
Actuator module: Removal - Refitting

K9K, and JA5

Remove the nuts (23) from the electro-hydraulic unit.

Remove:
- the lifting eye nut on the actuator module,
- the lifting eye (24) on the actuator module,
- the actuator module.

Refitting Preparations Operation

Check that the two half-moons are positioned correctly.

Position the two half-moons and the circlips in the selector shaft neck.

Coat the two half-moons and the selector finger with MOLYCOTE.

Lock the selector shaft (25).

Position the flat seal.

114151
117750
17972
17970
Using a screwdriver, press on the selector shaft to clip it onto the actuator module.

Refit:
- the low pressure pump pipe,
- the high pressure pump pipe,
- the clutch pipe,
- a new clip on the clutch pipe,
- the nuts from the actuator module.

Without tightening, fit:
- the clutch pipe nuts,
- the high pressure pump pipe nuts.

Torque tighten:
- the clutch pipe nuts (14 Nm),
- the high pressure pump pipe nuts (14 Nm),
- the gearbox mounting nut (21 Nm),
- the actuator module nuts (24 Nm).

Connect the sequential gearbox speed sensor connector.

Remove the (Mot. 1453) and the safety strap(s).

Reposition the left-hand suspended mounting on the gearbox.

Refit the bolts mounting the left-hand suspended mounting on the gearbox.

Torque tighten:
- the bolts mounting the left-hand suspended mounting on the gearbox (62 Nm),
- the stud mounting the left-hand suspended mounting on the gearbox (if it has been changed) (180 Nm)

Reposition the left-hand suspended mounting on the body.

Refit the left-hand suspended mounting bolts on the body.

Torque tighten:
- the bolts mounting the left-hand suspended mounting on the body (62 Nm),
- the gearbox left-hand rubber pad nut (62 Nm).

Refit:
- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Exterior protection))
- the engine undertray,
- the Protection and Switching Unit,
- the diesel injection computer (see Diesel injection computer: Removal - Refitting (MR 392, 13B, Diesel injection))
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment))
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment))
- the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture))
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery))
- the battery (see Battery: Removal - Refitting )
- the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)).
WARNING
After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil is at the MIN mark.

Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, Sequential gearbox)).
SEQUENTIAL GEARBOX

Actuator module: Removal - Refitting

D4F, and JA3

Special tooling required

Mot. 1453

Engine anchorage support

with multiple adjustments and

retaining straps.

Equipment required

Diagnostic tool

safety strap(s)

Tightening torques

clutch pipe nuts

14 Nm

high pressure pump

pipe nuts

14 Nm

gearbox mounting nut

21 Nm

actuator module nuts

24 Nm

bolts mounting the left-

hand suspended mount-

ing on the gearbox

62 Nm

stud mounting the left-

hand suspended mount-

ing on the gearbox (if it

has been changed)

180 Nm

bolts mounting the left-

hand suspended mount-

ing on the body

62 Nm

gearbox left-hand rub-

ber pad nut

62 Nm

Clutch solenoid valve

(1)

Gear engagement solenoid

valve

(2)

Gear engagement solenoid

valve

(3)

Selection solenoid valve

(4)

(17979)
REMOVAL

I - REMOVAL PREPARATION OPERATION

To discharge the accumulator, run command « Discharge pressure accumulator » AC081.

To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value.
If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed.

The pressure reading must be close to zero.

Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

Remove:
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the diesel injection computer (see Diesel injection computer: Removal - Refitting) (MR 392, 13B, Diesel injection),
- the wiring harness nut under the injection computer.

Remove the Protection and Switching Unit bolts (9).

Remove:
- the Protection and Switching Unit,
- the wiring harness under the injection computer.

Fit the (Mot. 1453) with a safety strap(s).

Remove:
- the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
- the engagement sensor (Engagement sensor) (6)
- the gear selection sensor (Gear selection sensor) (7)
- the solenoid valve unit pressure sensor (Solenoid valve unit pressure sensor) (8)
- the high pressure filter (High pressure filter).

IMPORTANT
Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
Actuator module: Removal - Refitting

**D4F, and JA3**

- the engine undertray.

### Remove:
- the nut (10) from the gearbox left-hand rubber pad,
- the bolts (11) from the left-hand suspended mounting on the body,
- the left-hand suspended mounting from the body,
- the bolts (12) from the gearbox left-hand suspended mounting,
- the gearbox left-hand suspended mounting.

### Disconnect:
- the connector from the actuator module (13),
- the connector from the pump assembly (14).

---

*Precaution:
Ensure the engine undertray is properly removed. This ensures access to the gearbox and other components.*
Remove:
- the clutch pipe (15)
- the clutch pipe bracket (16)
- Cut the clip on the clutch pipe (17)
21B

Actuator module: Removal - Refitting

Remove the high pressure pump pipes (18) and (19).

117754

117750
Sequential Gearbox
Actuator module: Removal - Refitting

**D4F, and JA3**

**II - OPERATION FOR REMOVAL OF PART CONCERNED**

1. Remove the low pressure pump pipe (20).

**Note:**
To avoid any sequential gearbox malfunction, mark the routing for the solenoid valve and sensor wiring on the actuator module.

**Note:**
The actuator module can be removed or refitted with the pressure accumulator in place.
Unlock the gear selector shaft by turning the shaft clockwise a quarter of a turn using a screwdriver. Disconnect the sequential gearbox speed sensor connector.
**Sequential Gearbox**

**Actuator module: Removal - Refitting**

- **D4F, and JA3**

**Removal**

- Remove the nuts \( a \) from the electro-hydraulic unit.

- **Remove:**
  - the lifting eye nut on the actuator module,
  - the lifting eye \( b \) on the actuator module,
  - the actuator module.

**Refitting**

**Preparations Operation**

- Check that the two half-moons are positioned correctly.

- Position the two half-moons and the circlips in the selector shaft neck.

- Coat the two half-moons and the selector finger with MOLYCOTE.

- Lock the selector shaft \( c \).

- Position the flat seal.
Using a screwdriver, press on the selector shaft to clip it onto the actuator module.

Refit:
- the low pressure pump pipe,
- the high pressure pump pipe,
- the clutch pipe,
- a new clip on the clutch pipe,
- the nuts from the actuator module.

Without tightening, fit:
- the clutch pipe nuts,
- the high pressure pump pipe nuts.

Torque tighten:
- the clutch pipe nuts (14 Nm),
- the high pressure pump pipe nuts (14 Nm),
- the gearbox mounting nut (21 Nm),
- the actuator module nuts (24 Nm).

Connect the sequential gearbox speed sensor connector.

Remove the (Mot. 1453) and the safety strap(s).

Reposition the left-hand suspended mounting on the gearbox.

Refit the bolts mounting the left-hand suspended mounting on the gearbox.

Torque tighten:
- the bolts mounting the left-hand suspended mounting on the gearbox (62 Nm),
- the stud mounting the left-hand suspended mounting on the gearbox (if it has been changed) (180 Nm).

Reposition the left-hand suspended mounting on the body.

Refit the left-hand suspended mounting bolts on the body.

Torque tighten:
- the bolts mounting the left-hand suspended mounting on the body (62 Nm),
- the gearbox left-hand rubber pad nut (62 Nm).

Refit:
- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Exterior protection)) (MR 393, 55A, Exterior protection),
- the engine undertray,
- the Protection and Switching Unit,
- the diesel injection computer (see Diesel injection computer: Removal - Refitting (MR 392, 13B, Diesel injection)) (MR 392, 55A, Exterior equipment),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment)) (MR 393, 56A, Exterior equipment),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment)) (MR 393, 56A, Exterior equipment),
- the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture)) (MR 392, 12A, Fuel mixture),
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)) (MR 392, 80A, Battery),
- the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)) (MR 392, 80A, Battery),
- the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)) (MR 392, 35A, Wheels and tyres).
**Warning**

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil is at the MIN mark.
Paragraph 1

Removal Preparation Operation

- Remove: the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)),
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)),
- the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture)).

Operation for Removal of Part Concerned

- Disconnect the gear selection sensor connector (1).
- Remove: the gear selection sensor bolts,
- the gear selection sensor (1).

Refitting

Preparations Operation

- Check that the gear selection sensor is able to rotate freely.

Operation for Refitting Part Concerned

- Refit: the gear selection sensor,
- the gear selection sensor bolts.
- Torque tighten the gear selection sensor bolts (4 Nm).
- Connect the gear selection sensor connector.

Final Operation

- Refit: the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture)),
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)),
- the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).
- Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox)).
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Remove:
  - the battery (see Battery: Removal - Refitting)
  - the battery tray (see Battery tray: Removal - Refitting)

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Disconnect the gear selection sensor connector (1).
- Remove:
  - the gear selection sensor bolts,
  - the gear selection sensor (1).

REFITTING

I - REFITTING PREPARATIONS OPERATION

- Check that the gear selection sensor is able to rotate freely.

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
  - the gear selection sensor,
  - the gear selection sensor bolts.
  - Torque tighten the gear selection sensor bolts (4 Nm).
- Connect the gear selection sensor connector.

III - FINAL OPERATION

- Refit:
  - the battery tray (see Battery tray: Removal - Refitting)
  - the battery (see Battery: Removal - Refitting)
- Carry out the necessary programming (see Fault finding - Replacement of components).
REMOVAL

I - REMOVAL PREPARATION OPERATION
a. Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

a. Disconnect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a. Remove the engine undertray.

a. Disconnect the clutch position sensor connector.

a. Remove:
   - the bolts (1)
   - the clutch position sensor (2).

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a. Refit:
   - the clutch position sensor,
   - the clutch position sensor bolts.

a. Connect the clutch position sensor connector.

II - FINAL OPERATION

a. Refit the engine undertray.

a. Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

a. Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox)).
REMOVAL

I - REMOVAL PREPARATION OPERATION

a. Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

b. Disconnect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a. Remove the engine undertray.

b. Disconnect the clutch position sensor connector.

c. Remove:
   - the clutch position sensor bolt (1),
   - the clutch position sensor (2).

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a. Refit:
   - the clutch position sensor,
   - the clutch position sensor bolts.

b. Connect the clutch position sensor connector.

c. Refit the engine undertray.

d. Connect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

e. Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox)).
REMOVAL

REMOVAL PREPARATION OPERATION

a To discharge the accumulator, run command « Discharge pressure accumulator » AC081.

To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value.

If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

a Remove:
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture).

a Disconnect the solenoid valve unit pressure sensor connector (1).

a Remove the pressure sensor from the solenoid valve unit (1) using a long socket.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a Fit the solenoid valve unit pressure sensor.

a Finger tighten the solenoid valve unit pressure sensor.

a Torque tighten the solenoid valve unit pressure sensor (15 Nm).

a Connect the solenoid valve unit pressure sensor connector.

II - FINAL OPERATION.

a Refit:
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

Equipment required

Diagnostic tool

Tightening torques

solenoid valve unit pressure sensor 15 Nm

IMPORTANT
Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.

17978
Sequential gearbox

Solenoid valve assembly pressure sensor: Removal - Refitting

K9K, and JA5

Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox).

WARNING
After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil is at the MIN mark.
REMOVAL

REMOVAL PREPARATION OPERATION

To discharge the accumulator, run command « Discharge pressure accumulator » AC081. To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

Remove:
- the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)),
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)).

Disconnect the solenoid valve unit pressure sensor connector (1).

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

Fit the solenoid valve unit pressure sensor.

Finger tighten the solenoid valve unit pressure sensor.

Torque tighten the solenoid valve unit pressure sensor (15 Nm).

Connect the solenoid valve unit pressure sensor connector.

II - FINAL OPERATION

Refit:
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)),
- the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

Equipment required

Diagnostic tool

Tightening torques

solenoid valve unit pressure sensor: 15 Nm

IMPORTANT

Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.

17978
21B

Sequential gearbox

Solenoid valve assembly pressure sensor: Removal - Refitting

D4F, and JA3

Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox).

WARNING

After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil is at the MIN mark.
I - REMOVAL PREPARATION OPERATION

1. To discharge the accumulator, run command « Discharge pressure accumulator » AC081. To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

2. Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

3. Disconnect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED

4. Remove the electro-hydraulic unit (see 21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting, page 21B-8).

5. Remove:
   - the mounting bolts (1) from the left-hand suspended mounting on the gearbox,
   - the left-hand suspended engine mounting (2) on the gearbox.

6. Disconnect the sequential gearbox speed sensor connector.

7. Remove:
   - the sequential gearbox speed sensor bolt,
   - the sequential gearbox speed sensor (3).

**Equipment required**

- Diagnostic tool

**Tightening torques**

- m sequential gearbox speed sensor 15 Nm
- the left-hand suspended engine mounting support bolts on the gearbox 62 Nm

**IMPORTANT** Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
Sequential gearbox engine speed sensor: Removal - Refitting

D4F, and JA3

III - REFITTING OPERATION FOR PART CONCERNED

1. Connect the sequential gearbox speed sensor connector.

2. Refit:
   - the sequential gearbox engine speed sensor,
   - the sequential gearbox sensor bolt.

3. Torque tighten the sequential gearbox speed sensor (15 Nm).

4. Refit:
   - the left-hand suspended engine mounting support on the gearbox,
   - the left-hand suspended engine mounting support bolts on the gearbox.

5. Torque tighten the left-hand suspended engine mounting support bolts on the gearbox (62 Nm).


7. Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

8. Carry out the necessary programming (see Fault finding - Replacement of components) (MR 394, 21B, Sequential gearbox).

WARNING
After the accumulator has been fully filled (15 seconds after the ignition has been switched on):
the oil is at the MIN mark.
1. REMOVAL PREPARATION OPERATION

a. To discharge the accumulator, run command « Discharge pressure accumulator » AC081. To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

b. Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

c. Disconnect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a. Remove the electro-hydraulic unit (see 21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting, page 21B-8).

b. Remove:
   - the mounting bolts (1) from the left-hand suspended mounting on the gearbox,
   - the left-hand suspended engine mounting (2) on the gearbox.

c. Disconnect the sequential gearbox speed sensor connector.

d. Remove:
   - the sequential gearbox speed sensor bolt,
   - the sequential gearbox speed sensor (3).

Equipment required:

- Diagnostic tool

Tightening torques:

- sequential gearbox speed sensor: 15 Nm
- the left-hand suspended engine mounting support bolts on the gearbox: 62 Nm

IMPORTANT

Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
Sequential gearbox engine speed sensor: Removal - Refitting
K9K, and JA5

III - REFITTING OPERATION FOR PART CONCERNED

a Refit:
- the sequential gearbox engine speed sensor,
- the sequential gearbox sensor bolt.

a Connect the sequential gearbox speed sensor connector.

a Torque tighten the sequential gearbox speed sensor (15 Nm).

a Refit:
- the left-hand suspended engine mounting support on the gearbox,
- the left-hand suspended engine mounting support bolts on the gearbox.

a Torque tighten the left-hand suspended engine mounting support bolts on the gearbox (62 Nm).

a Refit the electro-hydraulic unit (see 21B, Sequential gearbox, Electro-hydraulic unit: Removal - Refitting, page 21B-8).

a Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

a Carry out the necessary programming (see Fault finding - Replacement of components) (MR 394, 21B, Sequential gearbox).

WARNING
After the accumulator has been fully filled (15 seconds after the ignition has been switched on):
the oil is at the MIN mark.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a To discharge the accumulator, run command « Discharge pressure accumulator » AC081.
To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

Remove:

- the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)),
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)),
- the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture)),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment),
- the engine undertray.

Drain the sequential gearbox.

a Remove:

- the front wheels (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)),
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Exterior protection)),
- the front right-hand driveshaft (see 29A, Drive-shafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9),
- the front left-hand driveshaft (see 29A, Drive-shafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2),
- the diesel injection computer (see Diesel injection computer: Removal - Refitting (MR 392, 13B, Diesel injection)),
- the wiring harness nut under the injection computer.

a Remove the Protection and Switching Unit bolts (1).

a Remove:

- the Protection and Switching Unit,
- the wiring harness under the injection computer.

Special tooling required

Mot. 1453
Engine anchorage support with multiple adjustments and retaining straps.

Equipment required

Diagnostic tool
safety strap(s)
component jack

Tightening torques

m gearbox bell housing bolts 44 N.m

IMPORTANT
Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
Fit the (Mot. 1453) with a safety strap(s).

Remove:
- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
- the engine undertray,
- the rear suspended engine mounting (see 19D, Engine mounting, Rear suspended engine mounting: Removal-Refitting),
- the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34),
- the pump assembly (see 21B, Sequential gearbox, Sequential gearbox: Removal - Refitting, page 21B-66).

Attach the « cooling radiator - fan unit » assembly to the upper cross member using a safety strap(s).

Remove:
- the front bumper (see Front bumper: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (MR 393, 41A, Front lower structure).
Sequential gearbox: Removal - Refitting

K9K, and JA5

21B

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Remove:
- the stud (2) from the actuator module on the gearbox,
- the wiring harness channel bolts on the gearbox,
- the earth wiring bolt on the gearbox.

a Disconnect the engine speed and position sensor connector.

a Remove:
- the bolt from the engine speed and position sensor,
- the engine speed and position sensor (3).

a Remove:
- the exhaust bracket bolt on the gearbox,
- the exhaust bracket nut on the gearbox,
- the exhaust bracket (4) on the gearbox,
- the starter bolts,
- the gearbox upper bolts,
- the gearbox lower bolts.
Sequential gearbox: Removal - Refitting

K9K, and JA5

a Position the component jack (5) under the gearbox.

a Remove the gearbox.

I - REFITTING PREPARATION OPERATION

a Check that the engine/gearbox centring rings are in place and correctly positioned (6).

II - REFITTING OPERATION FOR PART CONCERNED

a Refit:
- the gearbox,
- the gearbox lower bolts,
- the gearbox upper bolts,
- the actuator module stud on the gearbox.

WARNING
To avoid damaging the slave cylinder, do not coat the gearbox output shaft with grease.

WARNING
To prevent leaks, replace the slave cylinder after replacing the clutch pressure plate.

Note:
- Always replace the right-hand driveshaft snap ring with a new one whenever it is removed.
- Always replace the differential output seals each time the driveshafts are removed.
Torque tighten the gearbox bell housing bolts (44 N.m).

Refit:
- the starter bolts,
- the wiring channel bolts on the gearbox,
- the earth wiring bolt on the gearbox,
- the exhaust bracket bolt on the gearbox,
- the speed and position sensor,
- the exhaust bracket on the gearbox,
- the pump assembly (see Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12),
- the actuator module (see Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34),
- the rear suspended engine mounting (see Lower engine tie-bar: Removal - Refitting) (MR 392, 19D, Engine mounting),

Remove the (Mot. 1453) and the safety strap(s).

Bleed the clutch circuit (see Sequential gearbox, Sequential gearbox: Bleeding, page 21B-84).
**REMOVAL**

I - REMOVAL PREPARATION OPERATION

**a** To discharge the accumulator, run command « Discharge pressure accumulator » AC081.

To confirm the pressure drop, read the « Hydraulic pressure » parameter for the resulting value. If there is still pressure in the accumulator, re-run the « Discharge pressure accumulator » command until the pressure is negligible and will not pose a risk when the high pressure pipes are removed. The pressure reading must be close to zero.

**a** Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

**a** Remove:

- the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)),
- the battery tray (see Battery tray: Removal - Refitting (MR 392, 80A, Battery)),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment)),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting (MR 393, 56A, Exterior equipment)),
- the engine undertray.

**a** Drain the sequential gearbox.

**a** Remove:

- the front wheels (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)),
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Exterior protection)),
- the front right-hand driveshaft (see 29A, Drive-shafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9),
- the front left-hand driveshaft (see 29A, Drive-shafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2),
- the diesel injection computer (see Diesel injection computer: Removal - Refitting (MR 392, 13B, Diesel injection)),
- the wiring harness nut under the injection computer.

**a** Remove the Protection and Switching Unit bolts (1).

**a** Remove:

- the Protection and Switching Unit,
- the wiring harness under the injection computer.

---

**IMPORTANT** Before any operation on the sequential system, discharge the accumulator using the Diagnostic tool.
Sequential gearbox: Removal - Refitting

D4F, and JA3

Fit the (Mot. 1453) with a safety strap(s).

Remove:
- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
- the engine undertray,
- the rear suspended engine mounting (see Lower engine tie-bar: Removal - Refitting (MR 392, 19D, Engine mounting)),
- the actuator module (see Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34),
- the pump assembly (see Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12).

Attach the « cooling radiator - fan unit » assembly to the upper cross member using a safety strap(s).

Remove:
- the front bumper (see Front bumper: Removal - Refitting (MR 393, 55A, Exterior protection)),
- the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting (MR 393, 41A, Front lower structure)).
Sequential gearbox: Removal - Refitting

D4F, and JA3

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Remove the stud (2) from the actuator module on the gearbox.

a Lift the cooling hose (3) to access the wiring harness channel bolts on the gearbox.

a Remove:
- the wiring harness channel bolts on the gearbox,
- the earth wiring bolt on the gearbox.

a Disconnect the engine speed and position sensor connector.

a Remove:
- the bolt from the engine speed and position sensor,
- the engine speed and position sensor (4).

a Remove:
- the flywheel protector bolt (6),
- the flywheel protector (5),
- the starter bolts,
- the gearbox upper bolts.
Sequential gearbox: Removal - Refitting

D4F, and JA3

1. Position the component jack under the gearbox.
2. Remove the gearbox.

REFITTING

I - REFITTING PREPARATION OPERATION

- Check that the engine/gearbox centring rings are in place and correctly positioned (8).

II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
  - the gearbox,
  - the gearbox lower bolts,

WARNING

- To avoid damaging the slave cylinder, do not coat the gearbox output shaft with grease.
- To prevent leaks, replace the slave cylinder after replacing the clutch pressure plate.

Note:
- Always replace the right-hand driveshaft snap ring whenever it is removed.
- Always replace the differential output seals each time the driveshafts are removed.
- Always replace the hydraulic clutch thrust bearing.
Sequential gearbox: Removal - Refitting

D4F, and JA3

- the gearbox upper bolts,
- the actuator module stud on the gearbox.

**Torque tighten the gearbox bolts (44 N.m)**.

**III - FINAL OPERATION**

- the starter bolts,
- the wiring channel bolts on the gearbox,
- the earth wiring bolt on the gearbox,
- the flywheel protector,
- the speed and position sensor,
- the pump assembly (see 21B, Sequential gearbox, Pump assembly: Removal - Refitting, page 21B-12),
- the actuator module (see 21B, Sequential gearbox, Actuator module: Removal - Refitting, page 21B-34),
- the rear suspended engine mounting (see Lower engine tie-bar: Removal - Refitting) (MR 392, 19D, Engine mounting),
- the (Mot. 1453) and the safety strap(s).
- Bleed the clutch circuit (see 21B, Sequential gearbox, Sequential gearbox: Bleeding, page 21B-84)

**Refit:**

- the side stiffener bolts on the left-hand side of the vehicle,
- the side stiffener on the left-hand side of the vehicle,
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the Protection and Switching Unit,
- the wiring harness under the injection computer,
- the diesel injection computer (see Diesel injection computer: Removal - Refitting) (MR 392, 13B, Diesel injection),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
- the air filter box (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery),
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- the engine undertray,
- the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (MR 393, 41A, Front lower structure),
- the front bumper (see Front bumper: Removal - Refitting) (MR 393, 55A, Exterior protection).

**WARNING**

After the accumulator has been fully filled (15 seconds after the ignition has been switched on):

The oil is at the MIN mark.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a. Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).

b. Disconnect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

c. Remove:
   - the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)),
   - the front wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Wheel arch liner)).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a. Remove:
   - the retaining belt (1) from the sequential gearbox computer,
   - the sequential gearbox computer connector (2),
   - the sequential gearbox computer (3).

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a. Refit:
   - the sequential gearbox computer,
   - the sequential gearbox computer connector,
   - the retaining belt from the sequential gearbox computer,

II - FINAL OPERATION

a. Refit:
   - the front wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Wheel arch liner)).
   - the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)),

a. Connect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

a. Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox)).
**REMOVAL**

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).
- Disconnect the battery (see Battery: Removal - Re\(\text{fitting} (MR 392, 80A, Battery).
- Remove:
  - the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
  - the front wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Wheel arch liner).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove:
  - the retaining belt (\(1\)) from the sequential gearbox computer,
  - the sequential gearbox computer connector (\(2\))
  - the sequential gearbox computer (\(3\)).

**REFITTING**

I - REFITTING OPERATION FOR PART CONCERNED

- Refit:
  - the sequential gearbox computer,
  - the sequential gearbox computer connector,
  - the retaining belt from the sequential gearbox computer,

II - FINAL OPERATION

- Refit:
  - the front wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Wheel arch liner).
  - the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
- Carry out the necessary programming (see Fault finding - Replacement of components) (MR 394, 21B, Sequential gearbox).
REMOVAL
I - REMOVAL PREPARATION OPERATION
a Disconnect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED
a Remove the gear lever cover (1) using a screwdriver.

a Disconnect the gear lever lighting connector (2).

a Remove:
- the rear bolts (3) from the centre console,
- the front bolts (4) from the centre console.
Sequential gearbox gear lever: Removal - Refitting

**K9K, and JA5**

**Removal**

- Remove the soundproofing (5) from the gear lever base plate.
- Detach the connector (6) from the gear lever.
- Disconnect the gear lever connector.
- Remove:
  - the bolts (7) from the gear lever base plate,
  - the gear lever.

**Refitting**

**I - Refitting Operation for Part Concerned**

- Refit:
  - the gear lever,
  - the gear lever base plate bolts,
- Connect the gear lever connector.
- Attach the gear lever connector.
- Refit:
  - the gear lever soundproofing,
  - the front bolts to the centre console,
  - the rear bolts to the centre console.
- Connect the gear lever lighting connector.
- Refit the gear lever cover.

**II - Final Operation.**

- Connect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).
- Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox)).
I - REMOVAL PREPARATION OPERATION

- Disconnect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the gear lever cover (1) using a screwdriver.
- Disconnect the gear lever lighting connector (2).
- Remove:
  - the rear bolts (3) from the centre console,
  - the front bolts (4) from the centre console.
Sequential gearbox gear lever: Removal - Refitting

D4F, and JA3

1. Remove the soundproofing (5) from the gear lever base plate.

2. Detach the connector (6) from the gear lever.

3. Disconnect the gear lever connector.

4. Remove:
   - the bolts (7) from the gear lever base plate,
   - the gear lever.

**REFITTING**

I - REFITTING OPERATION FOR PART CONCERNED

1. Refit:
   - the gear lever,
   - the gear lever base plate bolts,

2. Connect the gear lever connector.

3. Attach the gear lever connector.

4. Refit:
   - the gear lever soundproofing,
   - the front bolts to the centre console,
   - the rear bolts to the centre console.

5. Connect the gear lever lighting connector.

6. Refit the gear lever cover.

II - FINAL OPERATION.

1. Connect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).

2. Carry out the necessary programming (see Fault finding - Replacement of components (MR 394, 21B, Sequential gearbox)).
## Sequential gearbox oil specifications

### 5-speed manual sequential gearbox

<table>
<thead>
<tr>
<th>Gearbox Type</th>
<th>Type of Oil for Gearbox</th>
<th>Type of Oil for Sequential Unit</th>
<th>Type of Hydraulic Clutch Control Fluid</th>
</tr>
</thead>
<tbody>
<tr>
<td>JH1 TRANSELF</td>
<td>TRJ 75W80 or NFJ 75W80</td>
<td>ELF RENAULT-MATIC D3 SYN (3)</td>
<td>DOT4</td>
</tr>
<tr>
<td>JA3/JA5 TRANSELF</td>
<td>TRJ 75W80 or NFJ 75W80</td>
<td>ELF SPEEDMATIC (1)</td>
<td>DOT4</td>
</tr>
<tr>
<td>PA0/PA6 TRANSELF</td>
<td>TRX 75W80 or NFP 75W80</td>
<td>ELF SPEEDMATIC (1)</td>
<td>DOT4</td>
</tr>
</tbody>
</table>
### Sequential Gearbox Oil: Specifications

#### 5-Speed Manual Sequential Gearbox

<table>
<thead>
<tr>
<th>Gearbox Type</th>
<th>Transmission Type</th>
<th>Oil Brand</th>
<th>Oil Grade</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSELF TRX 75W80 or NFP75W80</td>
<td>API GL-4</td>
<td>MIL-L-2105 C or D</td>
<td>77 11 143 534 (5 litres)</td>
<td></td>
</tr>
<tr>
<td>TRANSELF TRJ 75W80 or NFP75W80</td>
<td>API GL-4</td>
<td>MIL-L-2105 C or D</td>
<td>May be ordered from ELF</td>
<td></td>
</tr>
<tr>
<td>RENAULTMATIC D3 SYN</td>
<td>DEXRON III</td>
<td>May be ordered from ELF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPEEDMATIC ATF</td>
<td>77 11 228 107 (1 litre)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I - PROCEDURE

a. Fill the reservoir (1) with approved clutch circuit fluid.

b. Activate the clutch tappet manually (releasing/engaging the clutch) until releasing/engaging the clutch becomes very difficult, without releasing any air bubbles. If necessary use the fluid (DOT4) to fill the reservoir.

c. Drain the reservoir of approved clutch circuit fluid.

d. Remove the bleed screw cap.

e. Connect a transparent tube to the bleed screw, connected to a syringe with an effective volume of 60 cm³ filled with approved fluid.

f. Push the clutch pipe retaining clip and pull the pipe so that it is in the bleed position.

g. Slowly inject the fluid in the syringe, making sure that the fluid does not overflow out of the reservoir.

h. Carry out the Intake - Reflux operations slowly using the syringe until all of the air bubbles have disappeared.

Equipment required

- Diagnostic tool

WARNING

- Even a tiny air bubble can cause a malfunction.
- Incorrect bleeding may cause fault finding errors and lead to an unnecessary part replacement.

WARNING

When removing the hydraulic clutch tappet, fill the tappet with an approved fluid (see Sequential gearbox, Sequential gearbox oil: Specifications, page 21B-82) before refitting the gearbox, following the procedure described below.
Sequential gearbox: Bleeding

1. Push the pipe back into the retaining clip.
2. Perform an auto-bleed using the Diagnostic tool.
3. Check that the system is operating correctly by carrying out a road test.
4. The level is correct when the fluid is halfway up the reservoir.
SEQUENTIAL GEARBOX
Electro-hydraulic unit: List and location of components

1. Clutch solenoid valve
2. Gear engagement solenoid valve
3. Gear engagement solenoid valve
4. Selection solenoid valve
5. Engagement sensor
6. Gear selection sensor
7. Solenoid valve unit pressure sensor
8. High pressure filter
Electro-hydraulic unit: List and location of components

- Clutch solenoid valve
- Gear engagement solenoid valve
- Gear engagement solenoid valve
- Selection solenoid valve
- Engagement sensor
- Gear selection sensor
- Solenoid valve unit pressure sensor
- High-pressure filter
The automatic transmission series number can be found in two places: on a label on the hydraulic distributor cover (1) and etched onto the outer casing (2) on the wheel side.
Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

Remove the engine undertray.

Remove:
- the level-setting plug (1),
- the oil overflow pipe (2) using an 8 mm Allen key (3).

Let the oil flow.

Refit the new spillway.

Torque tighten:
- the oil overflow pipe (9 N.m),
- the level-setting plug (35 N.m).

Equipment required
Diagnostic tool

Tightening torques
- oil overflow pipe: 9 N.m
- level-setting plug: 35 N.m
- filler cap: 35 N.m
- mounting nuts on the scoop under the scuttle: 6.5 N.m
- grille: 6.5 N.m

Note:
Drain the automatic transmission oil when the oil is warm (60˚C maximum), in order to remove as many impurities as possible.

Note:
Always replace the overflow pipe (2) every time it is removed.
Automatic gearbox oil: Draining - Filling

A Park the vehicle on level ground.
B It is essential to shift the selector lever to the Park position.
C Remove:
   - the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment),
   - the air filter box (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
   - the battery tray (see Battery tray: Removal - Refitting) (MR 392, 80A, Battery).
D Remove the filler cap (4).
E Use a funnel with a 15/100 filter to prevent any impurities from entering the system.
F Fill the gearbox with gearbox oil recommended by the manufacturer (see) (Technical Note 6012, 04, Lubricants) using 3.5 litres of new oil.
G Run the engine at idle speed.
H Connect the Diagnostic tool.
I Establish dialogue with the automatic gearbox computer.
J Monitor the gearbox oil temperature parameter.
K Wait for the temperature to reach 60˚C ±±±±.
L Place a container under the level-setting plug (5).
M Open the level-setting plug (5), leaving the engine running.
N If the oil does not flow out or the quantity collected is below 0.1 litres:
   - Switch off the engine,
   - add 0.5 litre of oil,
   - let the automatic transmission cool to 50˚C,
   - run the engine at idle speed,
   - connect the Diagnostic tool,
   - establish dialogue with the automatic transmission computer,
   - monitor the gearbox oil temperature parameter,
   - wait for the temperature to reach 60˚C,
   - place a container under the level-setting plug (5).
O Repeat these operations until more than 0.1 litres of oil is recovered in the container.

Refit the level-setting plug (5).

Torque tighten the filler cap (35 N.m).

Note: The level must be checked according to the procedure described below.
It is essential to shift the selector lever to the Park position.

Fill the automatic transmission with 0.5 litre of new oil.

Run the engine at idle speed.

Connect the Diagnostic tool.

Establish dialogue with the automatic transmission computer.

Monitor the gearbox oil temperature parameter.

Wait until the temperature reaches 60˚C ± 1.

Place a container under the level-setting plug, open the level-setting plug. If the oil does not flow or if the quantity collected is below 0.1 litres:

- Switch off the engine,
- add 0.5 litre of oil,
- let the automatic transmission cool to 50˚C,
- run the engine at idle speed,
- connect the Diagnostic tool,
- establish dialogue with the automatic transmission computer,
- monitor the gearbox oil temperature parameter,
- wait for the temperature to reach 60˚C ± 1,
- place a container under the level-setting plug,
- open the level-setting plug.

Repeat these operations until more than 0.1 litres of oil is recovered in the container.

Refit:

- the air filter box (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the scoop under the scuttle panel grille (see Scoop under the scuttle panel grille: Removal - Refitting) (MR 393, 56A, Exterior equipment).

Torque tighten the mounting nuts on the scoop under the scuttle panel grille (6.5 N.m).

Enter the date of the oil change using the Diagnostic tool (see Fault finding - Configurations and programming) (MR 394, 23A, Automatic transmission).

Note:

When the oil is replaced, the electronic oil ageing counter must be reset (inside the computer).
<table>
<thead>
<tr>
<th>Vehicle Engine</th>
<th>Automatic transmission</th>
<th>Transmission suffix</th>
<th>Reduction Final drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>CROC</td>
<td>BR0B</td>
<td>M4R 701 DP0 021</td>
<td>52 / 67 21 / 73</td>
</tr>
<tr>
<td>BROC</td>
<td>CR0B</td>
<td>K4M 801 DP0 074</td>
<td>52 / 67 20 / 73</td>
</tr>
</tbody>
</table>
Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

Lift the vehicle until the wheels are raised off the ground by a few centimetres.

Connect the Diagnostic tool.

Establish dialogue with the automatic transmission computer.

Monitor the automatic gearbox oil temperature parameter.

Check that the oil temperature is between 60˚C and 80˚C.

Start the engine and shift the lever to D.

Monitor the engine speed parameter:

Establish dialogue with the computer.

Accelerate fully, keeping the brakes applied. The front wheels should not rotate.

The engine speed should stabilise at 2700 rpm.

A setting point outside the tolerance requires the converter to be replaced.

WARNING

- Full load should not be maintained for more than 5 seconds. Beyond this, there is a high risk of destroying the converter or the automatic gearbox.

- Once the measurement has been taken, release the accelerator and keep the brakes on until the engine speed stabilises to idle speed (there is a risk of damaging the automatic gearbox if this is not done).

Note:

- A stall point which is too low may be linked to a lack of engine power.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a) Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (02A, Lifting equipment).

a) Remove:
- the engine undertray,
- the front wheels (see Wheel: Removal - Refitting) (35A, Wheels and tyres),
- the front wheel arch liners (see Front wheel arch liner: Removal - Refitting) (55A, Exterior protection),
- the battery (see ) (80A, Battery),
- the battery tray (see ) (80A, Battery),
- the front bumper (see Front bumper: Removal - Refitting) (55A, Exterior protection).

a) Disconnect the modular connector by pulling the connector slide mechanism (1).

Special tooling required
Mot. 1453
Engine anchorage support with multiple adjustments and retaining straps.

Equipment required
safety strap(s)
component jack
Diagnostic tool

Tightening torques
m automatic transmission bell housing bolts 44 Nm
converter nuts 25 Nm
exhaust manifold bracket nuts 21 Nm
subframe bolt automatic transmission connector bolts 20 Nm
Automatic gearbox: Removal - Refitting

K4M, and DP0

- Remove:
  - the multifunction switch control cable by pressing at (A),
  - the control cable sheath stop from the gearbox support by pulling the catch at (B).
- Disconnect the crankshaft position sensor connector.
- Remove the crankshaft position sensor.
- Disconnect the automatic transmission connector by pulling out the slide (2).
- Remove the bolts (3) from the automatic transmission and slide it into a waterproof plastic bag.
- Drain the cooling system (see Cooling system: Draining - Refilling) (19A, Cooling).
- Disconnect the hoses from the expansion bottle.
- Remove the plastic rivet from the expansion bottle.

Note:
Protect the automatic transmission connector by sliding it into a waterproof plastic bag.
Remove:
- the expansion bottle (4) in the direction of the arrow,
- the air resonator.

Disconnect the automatic transmission cooling hoses.
Remove the bottom cooling hose.
Unclip the top cooling hose from the thermostat.
Disconnect:
- the engine cooling fan,
- the engine fan relay unit,
- the pressostat.
Move the wiring aside.
Unclip the radiator fan unit.
Disconnect the anti-lock braking system sensor connectors.
Remove:
- the left-hand driveshaft (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2),
- the right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).
Remove the catalytic converter stay (5).
Fit the cooling assembly to the upper cross member using a safety strap(s).
Remove:
- the tie rod bolts (6),
- the side stiffener bolts (7),
- the bolts (8) on the cooling radiator support cross member,
- the cooling radiator support cross member,
- the fan unit.
AUTOMATIC GEARBOX
Automatic gearbox: Removal - Refitting

- Loosen the subframe bolt (9).
- Turn the stay (10) towards the rear to free the access to the automatic transmission.
- Remove:
  - the exhaust manifold bracket nuts (11),
  - the engine tie-bar (see Lower engine tie-bar: Removal - Refitting (19D, Engine mounting),
  - the petrol injection computer (see Petrol injection computer: Removal - Refitting (17B, Petrol injection).

- Remove the wiring channel nuts (12) on the body.
- Attach the wiring channel in order to access the automatic transmission support freely.
- Remove the wiring channel nuts on the engine.
- Remove:
  - the bolt (13) on the automatic transmission earth strap,
  - the starter (see Starter: Removal - Refitting (16A, Starting - Charging),
  - the converter nuts via the starter aperture.
AUTOMATIC GEARBOX
Automatic gearbox: Removal - Refitting

11 - OPERATION FOR REMOVAL OF PART CONCERNED

a. Remove the upper automatic transmission bell housing stud (14).

a. Fit the tool (Mot. 1453) with its safety strap(s).

a. Remove:
   - the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting 110247 113385)
   - the automatic transmission bell housing upper bolts.

a. Fit the component jack beneath the automatic transmission.

a. Remove:
   - the lower bolts (15) on the automatic transmission bell housing,
   - the automatic transmission lower stud (16),
   - the automatic gearbox.

a. Attach the converter with string to stop it being detached.
Automatic gearbox: Removal - Refitting

K4M, and DP0

I - REFITTING PREPARATION OPERATION

a. Check that the centring dowels (17) are in place.

b. Check the positioning of the converter in relation to the engine/automatic transmission coupling face using a ruler and a slide; the value should be (X) = 18.22 mm ±1.

II - REFITTING OPERATION FOR PART CONCERNED

a. Refit:
   - the automatic gearbox,
   - the automatic transmission studs,
   - the automatic transmission bell housing lower bolts.

III - FINAL OPERATION.

a. Remove the tool (component jack) under the automatic transmission.

b. Refit the automatic transmission bell housing upper bolts.

c. Torque tighten the automatic transmission bell housing bolts (44 Nm).

d. Refit the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (19D, Engine mounting).

Note:
Do not reuse the converter nuts or the inertia flywheel nuts if they have been removed: always use new nuts.

Note:
Ensure that the converter is inserted correctly in the input shaft.
Remove the tool (Mot. 1453) with its safety strap(s).

Refit the converter nuts via the starter aperture.

Torque tighten the converter nuts (25 Nm).

Refit:
- the starter (see Starter: Removal - Refitting (16A, Starting - Charging)),
- the earth strap bolt on the automatic transmission.

Detach the wiring channel.

Refit:
- the nuts mounting the wiring channel to the body,
- the petrol injection computer (see Petrol injection computer: Removal - Refitting (17B, Petrol injection),
- the engine tie-bar (see Lower engine tie-bar: Removal - Refitting (19D, Engine mounting),
- the exhaust manifold bracket.

Torque tighten the exhaust manifold bracket nuts (21 Nm).

Refit the subframe tie-rod.

Torque tighten the subframe bolt (105 Nm).

Refit:
- the fan assembly via the underbody of the vehicle,
- the radiator support cross member,
- the radiator support cross member bolts,
- the side stiffener bolts,
- the tie-rod bolts.

Detach the cooling assembly from the upper cross member.

Refit:
- the catalytic converter stay,
- the left-hand driveshaft (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting),
- the right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting).

Connect the ABS sensor connectors.

Clip on the radiator fan assembly.

Connect:
- the pressostat,
- the engine fan relay unit,
- the engine cooling fan.

Fit the thermostat upper cooling hose.

Refit the lower cooling hose.

Connect the automatic transmission cooling hoses.

Refit:
- the air resonator,
- the expansion bottle,
- the plastic rivet of the expansion bottle,
- the front bumper (see Front bumper: Removal - Refitting (55A, Exterior protection)).

Connect the expansion bottle hoses.

Fill the cooling system (see Cooling system: Draining - Refilling (19A, Cooling)).

Take the automatic transmission connector out of the plastic bag.

Refit the automatic transmission connector.

Torque tighten the automatic transmission connector bolts (20 Nm).

Connect the automatic transmission connector by pushing the slide mechanism.

Refit the crankshaft position sensor.

Connect the crankshaft position sensor.

Refit:
- the control cable sheath stop on the automatic transmission mounting,
- the multifunction switch control cable.

Connect the modular connector by pushing the connector slide mechanism.

Refit:
- the battery tray (see Battery: Removal - Refitting (80A, Battery),
- the battery (see Battery: Removal - Refitting (80A, Battery),
- the front wheel arch liners (see Front wheel arch liner: Removal - Refitting (55A, Exterior protection),
- the front wheels (see Wheel: Removal - Refitting (35A, Wheels and tyres),
- the engine undertray.

Connect the battery (see Battery: Removal - Refitting (80A, Battery)).

Check the automatic transmission oil level (see 23A, Automatic gearbox, Automatic gearbox oil: Draining - Filling (23A-2)).
If replacing the oil distributor, clear the auto-adaptive strategies using command RZ005 Clear auto-adaptive strategies and reset the oil ageing counter on the automatic transmission computer using the diagnostic tool, run command CF074 « Write gearbox oil change date ».

After running command RZ005, it is essential to carry out a test drive performing all gear changes, both up and down, several times to store the new values.
REMOVAL

I - REMOVAL PREPARATION OPERATION

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (02A, Lifting equipment).

a Remove:
- the engine cover,
- the engine undertray.

a Remove the air resonator on the battery following the direction of the arrows (A) then (B).

a Remove the battery (see Battery: Removal - Refitting) (80A, Battery).

a Remove:
- the modular connector (1),
- the air filter (see Air filter: Removal - Refitting) (12A, Fuel mixture),
- the battery tray (see ) (80A, Battery).

a Drain the cooling system (see Cooling system: Draining - Refilling) (19A, Cooling).

a Remove:
- the front wheels (see Wheel: Removal - Refitting) (35A, Wheels and tyres),
- the front bumper (see Front bumper: Removal - Refitting) (55A, Exterior protection),
- the headlights (see ) (80B, Headlights) or (see Xenon headlight: Removal - Refitting) (80C, Xenon bulbs),
- the frontal impact cross member (see Frontal impact cross member: Removal - Refitting) (41A, Front lower structure),
- the front end panel (see Front end panel: Removal - Refitting) (42A, Upper front structure),
- the cooling radiator (see Cooling radiator: Removal - Refitting) (19A, Cooling).

Special tooling required

Mot. 1672
Lower engine support.

Equipment required

component jack

Tightening torques

- automatic gearbox bell housing bolts: 44 Nm
- converter nuts: 25 Nm
- subframe bolt: 105 Nm
- converter nuts: 25 Nm
Automatic gearbox: Removal - Refitting

M4R, and 701, and DP0, and 021

**a.** Remove:
- the multifunction switch control (2),
- the multifunction switch sheath stop (3).

**a.** Disconnect:
- the cooling hoses at (4) on the automatic gearbox,
- the automatic gearbox connector (5),
- the connector (6) from the automatic gearbox speed sensor,
- the bolt (7) securing the automatic gearbox earth strap,
- the starter (see Starter: Removal - Refitting (16A, Starting - Charging)).
Automatic gearbox: Removal - Refitting

- the converter nuts via the starter aperture.

- the wiring channel mounting nuts on the body,
- the wiring channel mounting nuts on the engine.

- Unscrew the nut (8) from the automatic gearbox upper stud.

- Remove:
  - the left-hand driveshaft (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2),
  - the right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).

- Remove:
  - the side stiffener bolts (9),
  - the side stiffener,
  - the tie-rod bolt (10).

- Loosen the subframe bolt (11).

- Move the tie rod (12) back to enable access to the automatic gearbox.

- Remove the radiator support cross member (see Radiator mounting cross member: Removal - Refitting) (41A, Front lower structure).
Automatic gearbox: Removal - Refitting

II - OPERATION FOR REMOVAL OF PART CONCERNED

Fit the component jack beneath the automatic transmission.

Remove:
- the lower bolts (14) on the automatic gearbox bell housing,
- the automatic gearbox.

Attach the converter with string to stop it being detached.

REFITTING

I - REFITTING PREPARATION OPERATION

Check that the centring dowels (15) are in place.

M4R, and 701, and DP0, and 021

Fit the tool (Mot. 1672) making sure that the support (13) is positioned as shown on the diagram.

Remove:
- the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (19D, Engine mounting),
- the automatic gearbox bell housing upper bolts.
II - REFITTING OPERATION FOR PART CONCERNED

- Refit:
  - the automatic gearbox,
  - the lower bolts on the automatic gearbox bell housing,
  - the converter nuts via the starter aperture.

III - FINAL OPERATION

- Remove the tool component jack under the automatic gearbox.
- Refit the automatic gearbox upper bolts.
  - Tighten to torque:
    - the automatic gearbox bell housing bolts (44 Nm),
    - the converter nuts (25 Nm).
- Refit the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (19D, Engine mounting).
- Remove the (Mot. 1672).
- Refit the radiator support cross member (see Radiator mounting cross member: Removal - Refitting) (41A, Front lower structure).
- Fit the tie-rod (16).
- Refit the tie-rod bolt at (17).
- Torque tighten the subframe bolt (105 Nm) (18).
- Refit:
  - the side stiffener,
  - the left-hand driveshaft (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2),
  - the right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9),
  - the wiring channel mounting nuts on the body,
  - the wiring channel mounting nuts on the engine.
- Torque tighten the converter nuts (25 Nm).
Refit:
- the starter (see Starter: Removal - Refitting)
- the earth strap on the automatic gearbox,
- the automatic gearbox earth strap bolt.

Connect:
- the automatic gearbox connector,
- the automatic gearbox speed sensor connector,
- the cooling hoses on the automatic gearbox.

Refit:
- the multifunction switch sheath stop,
- the multifunction switch control,
- the cooling radiator (see Cooling radiator: Removal - Refitting)
- the front end panel (see Front end panel: Removal - Refitting)
- the frontal impact cross member (see Frontal impact cross member: Removal - Refitting)
- the headlights (see Headlights)
- the front bumper (see Front bumper: Removal - Refitting)
- the front wheels (see Wheel: Removal - Refitting)
- the battery tray (see Battery: Removal - Refitting)
- the air filter (see Air filter: Removal - Refitting)
- the modular connector,
- the battery (see Battery: Removal - Refitting).

Push the air resonator towards the rear of the vehicle so that the corner of the air resonator is between the two lines marked on the air inlet hose.

Press on the air resonator to fit it onto the battery cover.

Perform the following operations:
- fill the cooling system (see Cooling system: Draining - Refilling)
- bleed the cooling system.

Refit:
- the engine cover,
- the engine undertray.
AUTOMATIC GEARBOX
Drive plate: Removal - Refitting

REMOVAL

I - REMOVAL PREPARATION OPERATION

a Remove the gearbox (see Automatic gearbox, Automatic gearbox: Removal - Refitting, page 23A-7).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Set up the (Mot. 582-01)

a Remove:
- the bolts (Mot. 582-01),
- the drive plate, tool (Mot. 582-01).

REFITTING

I - REFITTING PREPARATIONS OPERATION

a Check that the drive plate is not damaged (run-out tolerance of 0.2 mm on the outer diameter).

II - REFITTING OPERATION FOR PART CONCERNED

a Fit the drive plate, ensuring it is correctly positioned in relation to the centring pins.

a Apply LOCTITE FRENBLOC to the bolt threads.

a Tighten the bolts on the drive plate.

a Torque and angle tighten the drive plate bolts (55 Nm + 50˚ ± 5) by immobilising the starter ring using the (Mot. 582-01).

III - FINAL OPERATION.

a Refit the gearbox (see Automatic gearbox, Automatic gearbox: Removal - Refitting, page 23A-7).

a Connect the Diagnostic tool for the conformity check.

Special tooling required

Mot. 582-01 Flywheel locking tool.

Equipment required

Diagnostic tool

Tightening torques

m drive plate bolts 55 Nm + 50˚ ± 5
Drive plate: Removal - Refitting

I - REMOVAL PREPARATION OPERATION

a) Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

b) Remove:
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the battery tray (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- drain the cooling system (see Cooling system: Draining - Refilling) (MR 392, 19A, Cooling).

b) Remove:
- the front wheels (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- the front bumper (see Front bumper: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the headlights (see Headlights: Removal - Refitting) (MR 392, 80B, Headlights),
- the frontal impact cross member (see Frontal impact cross member: Removal - Refitting) (MR 393, 41A, Front lower structure),
- the front end panel (see Front end panel: Removal - Refitting) (MR 393, 42A, Upper front structure),
- the cooling radiator (see Cooling radiator: Removal - Refitting) (MR 392, 19A, Cooling),
- the starter (see Starter: Removal - Refitting) (MR 392, 16A, Starting-charging),
- the left-hand driveshaft (see Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).
- the right-hand driveshaft (see Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).
- the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (MR 393, 41A, Front lower structure),
- the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (MR 392, 19D, Engine mounting),
- the automatic gearbox (see Automatic gearbox: Removal - Refitting, page 23A-7).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a) Set up the (Mot. 919-02) (1).

b) Remove:
- the drive plate mounting bolts (2),
- the drive plate,
- the (Mot. 919-02).

Special tooling required

Mot. 919-02 Flywheel locking tool.

Tightening torques

m drive plate bolts 108 Nm

IMPORTANT

During this operation, secure the vehicle to the lift with a strap to prevent it from becoming unbalanced.

116747
AUTOMATIC GEARBOX
Drive plate: Removal - Refitting

M4R, and DP0

I - REFITTING PREPARATIONS

a) Check that the drive plate is not damaged (run-out tolerance of 0.2 mm on the outer diameter).

II - REFITTING OPERATION FOR PART CONCERNED

a) Fit the drive plate, ensuring it is correctly positioned in relation to the centring pins.

a) Apply HIGH RESISTANCE THREAD LOCK to the bolt threads.

a) Finger tighten the drive plate mounting bolts.

a) Torque and angle tighten the drive plate bolts (108 Nm) by immobilising the starter ring with the tool.

III - FINAL OPERATION.

a) Refit:

- the automatic gearbox (see Automatic gearbox: Removal - Refitting, page 23A-7),
- the left-hand suspended engine mounting (see Left-hand suspended engine mounting: Removal - Refitting) (MR 392, 19D, Engine mounting),
- the radiator mounting cross member (see Radiator mounting cross member: Removal - Refitting) (MR 393, 41A, Front lower structure),
- the right-hand driveshaft (see Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9),
- the left-hand driveshaft (see Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2),
- the starter (see Starter: Removal - Refitting) (MR392, 16A, Starting-charging),
- the cooling radiator (see Cooling radiator: Removal - Refitting) (MR 392, 19A, Cooling),
- the front end panel (see Front end panel: Removal - Refitting) (MR 393, 42A, Upper front structure),
- the frontal impact cross member (see Frontal impact cross member: Removal - Refitting) (MR 393, 41A, Front lower structure),
- the headlights (see Headlights) or (see Xenon headlight: Removal - Refitting) (MR 392, 80C, Xenon bulbs),
- the front bumper (see Front bumper: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the front wheels (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).

a) Fill the cooling system (see Cooling system: Draining - Refilling) (MR 392, 19A, Cooling).

a) Refit:

- the battery tray (see Battery: Removal - Refitting) (MR 392, 80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

a) Bleed the cooling system (see Cooling system: Draining - Refilling) (MR 392, 19A, Cooling).
MULTIFUNCTION SWITCH
Removal - Refitting

Removal Preparation Operation

- Shift the selector lever to Neutral.
- Disconnect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
- Remove the battery tray (see ) (MR 392, 80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture).

- Pull the wiring connector lock (1).
- Disconnect the modular connector (2).
- Uncouple the automatic transmission control linkage by pressing (A).
- Pull the control cable sleeve stop lock (B).

Tightening Torques

- Gearbox connector mounting bolts 20 Nm

110246

110245

110243
Pull the wiring connector lock (3).

Disconnect the vehicle wiring.

Remove the gearbox connector mounting bolts (4) from the support plate.

Remove the green connector (6) from the gearbox connector (12 track).

Remove:
- the automatic transmission control cable support mounting bolts (7),
- the automatic transmission control cable support (8).

Detach the multifunction switch harness from the automatic transmission wiring neck.

Mark the position of the automatic transmission control linkage.
AUTOMATIC GEARBOX
Multifunction switch: Removal - Refitting

**Remove**
- the automatic transmission control linkage (9)
- the multifunction switch mounting bolts (10)
- the multifunction switch (11)

**REFITTING**

**I - REFITTING OPERATION FOR PART CONCERNED**
- Refit the multifunction switch into the Neutral position.
- Finger tighten the multifunction switch mounting bolts until contact.
- Refit the automatic transmission control linkage.
- Adjust the multifunction switch (see 23A, Automatic transmission, Multifunction switch: Adjustment).
- Refit:
  - the automatic transmission control cable support,
  - the automatic transmission control cable support mounting bolt.
- Fit the green connector into the gearbox connector (12-track).

**II - FINAL OPERATION**
- Refit the gearbox connector mounting board mounting bolts.
- Torque tighten the gearbox connector mounting bolts (20 Nm).
- Connect the automatic transmission wiring connector.
- Push the gearbox connector lock.
- Fit the automatic transmission control cable onto the mounting sheath stop.
- Push the control cable sheath stop lock.
- Connect the modular connector.
- Push the modular connector lock.
- Refit:
  - the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
  - the battery tray (see ) (MR 392, 80A, Battery).
- Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
AUTOMATIC GEARBOX

Multifunction switch: Adjustment

1. Put the multifunction switch into the Neutral position.
2. Place the test probes of an ohmmeter on the multifunction switch position check tabs.
3. Turn the multifunction switch by hand until the electrical contact is closed (resistance at contact terminals to be measured as 0 Ω with a tolerance of 60 Ω).
4. Torque tighten the multifunction switch bolts (10 N.m).
5. Check that the resistance at the contact terminals is still 0 Ω with a tolerance of 60 Ω after tightening.
6. Check that the system and gear selection are working correctly.

Tightening torques:
multifunction switch bolts: 10 N.m
Do not drain or remove the automatic gearbox in order to remove the speed sensor.
The output speed sensor has been deleted and replaced with wheel speed sensors.

**REMOVAL**

**I - REMOVAL PREPARATION OPERATION**
- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).
- Disconnect the battery (see ) (MR 392, 80A, Battery).
- Remove:
  - the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
  - the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection),
  - the battery tray (see ) (MR 392, 80A, Battery),
  - the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture).
- Disconnect the modular connector (1) by pulling the sliding latch (2).

**II - REMOVAL OPERATION FOR THE PART CONCERNED**
- Disconnect the gearbox connector (3) by pulling the sliding latch (4).
- Remove the gearbox connector mounting bolts (5).

**Tightening torques**
- speed sensor mounting bolt: 10 Nm
- gearbox connector mounting bolts: 20 Nm
Extract the speed sensor connector (marked [ ]) from the gearbox.

Release the speed sensor wiring harness from the automatic transmission wiring duct.

- Remove:
  - the speed sensor mounting bolt,
  - the speed sensor ([7]).

**REFITTING**

- Refit the speed sensor.
- Torque tighten the speed sensor mounting bolt (10 Nm).
Connect the green connector (3-track) of the gearbox connector.

**II - FINAL OPERATION**

- Refit the gearbox connector mounting bolts.
- Torque tighten the gearbox connector mounting bolts (20 Nm).
- Connect the gearbox connector by pushing in the slide.
- Refit:
  - the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
  - the battery tray (see ) (MR 392, 80A, Battery),
  - the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection),
  - the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).
- Connect the battery (see ) (MR 392, 80A, Battery).
- Check the gearbox oil level (see Automatic gearbox, Automatic gearbox oil: Draining - Filling, page 23A-2).
AUTOMATIC GEARBOX
Pressure sensor: Removal - Refitting

REMOVAL

1. REMOVAL PREPARATION OPERATION

a. Position the vehicle on the two-post lift (see 02A, Lifting equipment, Vehicle: Towing and lifting).

b. Disconnect the battery (see 80A, Battery, Battery: Removal - Refitting).

c. Remove:
   - the front left-hand wheel (see 35A, Wheels and tyres, Wheel: Removal - Refitting),
   - the front left-hand wheel arch liner (see 55A, Exterior protection, Wheel arch liner: Removal - Refitting),
   - the engine undertray.

2. REMOVAL

a. Remove:
   - the battery tray (see 80, Battery, Battery tray: Removal - Refitting),
   - the air filter unit (see 12A, Fuel mixture, Air filter unit: Removal - Refitting).

a. Disconnect the modular connector (1) by pulling the sliding (2).

a. Disconnect the gearbox connector from the mounting plate by pulling the slide (3).

a. Remove the gearbox connector mounting bolts (4) from the plate.

Tightening torques

- pressure sensor mounting bolts: 8 N.m
- pressure sensor wiring harness mounting bolts: 8 N.m
- gearbox connector mounting bolts: 20 N.m
Pressure sensor: Removal - Refitting

**Removal**

1. Remove the green connector (3-track) (5) from the gearbox connector on the mounting plate.

2. Release the pressure sensor wiring harness from the automatic transmission wiring duct.

**Refitting**

1. **Refit:**
   - the pressure sensor,
   - the pressure sensor mounting bolts,
   - the wiring harness mounting bolt.

2. **Tighten to torque:**
   - the pressure sensor mounting bolts (8 N.m),
   - the pressure sensor wiring harness mounting bolts (8 N.m).

3. Connect the pressure sensor harness from the automatic transmission.
AUTOMATIC GEARBOX
Pressure sensor: Removal - Refitting

II - FINAL OPERATION

a Refit the gearbox connector mounting plate mounting bolts.

a Torque tighten the gearbox connector mounting bolts (20 N.m).

a Connect the gearbox connector on the mounting plate by pulling out the slide.

a Refit:
- the air filter unit (see 12A, Fuel mixture, Air filter unit: Removal - Refitting),
- the battery protective base (see 80A, Battery, Battery tray: Removal - Refitting),

a Connect the modular connector by reinserting the slide.

a Refit the battery shield (see 80A, Battery, Battery tray: Removal - Refitting).

a Refit:
- the front left-hand wheel arch liner (see 55A, Bodywork, Exterior protection, Wheel arch liner: Removal - Refitting),
- the engine undertray,
- the front left-hand wheel (see 35A, Wheels and tyres, Wheel: Removal - Refitting).

a Connect the battery (see 80A, Battery, Battery: Removal - Refitting).

a Check the gearbox oil level (see 23A, Gearbox oil: Draining - Filling).
AUTOMATIC GEARBOX
Hydraulic distributor: Removal - Refitting

REMOVAL
- REMOVAL PREPARATION OPERATION
  a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
  a Shift the selector lever to Neutral.
  a Disconnect the battery (see Battery: Removal - Refitting (MR 392, 80A, Battery)).
  a Remove:
    - the front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)),
    - the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Exterior protection)),
    - the engine undertray.
  a Drain the automatic transmission (see Automatic gearbox, Automatic gearbox oil: Draining - Filling, page 23A-2 (MR 392, 23A, Automatic transmission)).
  a Remove:
    - the battery tray (see ),
    - the air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture)).
  a Disconnect the modular connector by pulling the sliding latch (1).

Special tooling required
Bvi. 1462 Locating ball spring adjustment bolt.

Equipment required
Diagnostic tool

Tightening torques
- distributor mounting bolts 7.5 Nm
- locating ball spring bracket mounting bolt 9 Nm
- locating ball spring mounting bolt 8 Nm
- cover mounting bolts 10 Nm
- reinforcement plate mounting bolts 21 Nm
1. Remove:
   - the multifunction switch control cable by pressing the multifunction switch in the position (A).
   - the control cable sleeve stop from the gearbox support by pulling the catch at (B).

2. Drain the cooling system (see Cooling system: Draining - Refilling (MR 392, 19A, Cooling)).

3. Remove the expansion bottle hose at the radiator end.

4. Remove the front bumper (see Front bumper: Removal - Refitting (MR 393, 55A, Exterior protection)).

5. Remove the plastic rivet of the expansion bottle.

6. Remove:
   - the expansion bottle (2) in the direction of the arrow,
   - the resonator.

7. Remove:
   - the cooling hoses at the automatic transmission side,
   - the bottom cooling hose, to provide free access to the radiator.

8. Remove the fan assembly (see Engine cooling fan assembly: Removal - Refitting (MR 392, 19A, Cooling)).

9. Attach the radiator to the upper cross member.
AUTOMATIC GEARBOX
Hydraulic distributor: Removal - Refitting

Remove:
- the tie-rod mounting bolts (3),
- the mounting bolts (4) of the side stiffener,
- the radiator mounting lower cross member mounting bolts (5),
- the lower radiator cross member.

II - OPERATION FOR REMOVAL OF PART CONCERNED

Remove the hydraulic distributor cover mounting bolts (6) (oil may flow out).

Remove the hydraulic distributor mounting bolts (7).

Disconnect the hydraulic distributor solenoid valve connectors (8).

109170
110233
110232
Fit the distributor with its protection plate, centring it using the bolts (4) and (5).

Refit the other bolts on the distributor.

Tighten to torque and in order the distributor mounting bolts (7.5 Nm).

WARNING
Check that the distributor slide is properly engaged with the notched sector lug (9).
ADJUSTING THE LEAF SPRING LEVER

1. Hold the multifunction switch lever in the end position (first selected) using a hose clip and a bolt (13) in the mechanism housing.

2. Remove the bolt (14).

3. Fit the locating ball spring by fitting the bearing (10) into the groove (11) for the notched sector (12) corresponding to first selected.

4. Fit the locating ball spring bracket mounting bolt (15) without tightening it.

5. Screw the tool in fully whilst holding the locating ball spring.

6. Torque tighten the locating ball spring bracket mounting bolt (9 Nm) (15).

7. Remove the (Bvi. 1462) (16) in place of the bolt (14).

8. Refit the locating ball spring mounting bolt (14).

9. Torque tighten the locating ball spring mounting bolt (8 Nm).

10. Remove the hose clip and the bolt (13).

11. If the oil distributor is replaced, the auto-adaptatives must be reset to zero using command RZ005 « Clear auto-adaptives » and reset the oil age counter on the automatic transmission computer using the Diagnostic tool, run command CF074 « Enter date of gearbox oil change ».

12. After running command RZ005, it is essential to carry out a test drive performing all gear changes, both up and down, several times to store the new values.

13. Torque tighten:
   - the cover mounting bolts (10 Nm),
   - the reinforcement plate mounting bolts (21 Nm).
Refit:
- the radiator lower cross member,
- the side reinforcement,
- the tie-rod,
- the fan assembly (see Engine cooling fan assembly: Removal - Refitting) (MR 392, 19A, Cooling),
- the bottom cooling hose,
- the cooling hoses at the automatic transmission side,
- the resonator,
- the expansion bottle,
- a new expansion bottle plastic attachment rivet,
- the expansion bottle hose,
- the multifunction switch control cable.

Connect the modular connector.

Refit:
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture),
- the battery tray (see Battery: Removal - Refitting) (MR 392, 80A, Battery).


Refit:
- the engine undertray,
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).

Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
Do not drain or remove the automatic gearbox in order to remove the flow control solenoid valve.

**REMOVAL**

I - REMOVAL PREPARATION OPERATION

a. Place the vehicle on a two-post lift (see 02A, Lifting equipment, Vehicle: Towing and lifting).

b. Disconnect the battery (see 80A, Battery, Battery: Removal - Refitting).

c. Remove:
   - the front left-hand wheel (see 35A, Wheels and tyres, Wheel: Removal - Refitting).
   - the front left-hand wheel arch liner (see MR 393, Bodywork, 55A, Exterior Protection, Wheel arch liner: Removal - Refitting).
   - the battery tray (see 80A, Battery, Battery tray: Removal - Refitting).
   - the air filter unit (see 12A, Fuel mixture, Air filter unit, Removal - Refitting).

   a. Disconnect the modular connector (1) by pulling the connector sliding latch (2).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a. Disconnect the flow control solenoid valve connector (3).

b. Unclip the flow control solenoid valve connector (3) from the gearbox connector support.

b. Release the flow control solenoid valve wiring harness from the automatic transmission wiring duct.

**TIGHTENING TORQUES**

- Heat exchanger flow control solenoid valve mounting bolt: 10 Nm.
AUTOMATIC GEARBOX

Flow control solenoid valve: Removal - Refitting

- Remove:
  - the solenoid valve mounting bolts (4)
  - the heat exchanger flow control solenoid valve (5).

II - FINAL OPERATION

- Connect the modular connector by pushing the sliding latch.
- Refit:
  - the air filter unit (see 12A, Fuel mixture, Air filter unit: Removal - Refitting).
  - the battery tray (see 80A, Battery, Battery tray: Removal - Refitting).
  - the front left-hand wheel arch liner (see MR 393, Bodywork, 55A, Exterior Protection, Wheel arch liner: Removal - Refitting).
  - the front left-hand wheel (see 35A, Wheels and tyres, Wheel: Removal - Refitting).
  - Connect the battery (see 80A, Battery, Battery: Removal - Refitting).
  - Check the gearbox oil level (see 23A, Gearbox oil: Draining - Filling).
REM OVAL
I - REMOVAL PREPARATION OPERATION

II - OPERATION FOR REMOVAL OF PART CONCERNED
a. Remove the hydraulic distributor solenoid valves.

REFITTING
I - REFITTING OPERATION FOR PART CONCERNED
a. Refit the hydraulic distributor solenoid valves.

II - FINAL OPERATION

WARNING
Work as cleanly as possible to prevent foreign bodies from entering the system.

1. Modulating solenoid valve
2. Lock up » solenoid valve (lockup converter)
3. Sequence solenoid valve 4
4. Sequence solenoid valve 3
5. Sequence solenoid valve 1
6. Sequence solenoid valve 2
7. Sequence solenoid valve 6
8. Sequence solenoid valve 5
REMOVAL

I - REMOVAL PREPARATION OPERATION

a) Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

b) Shift the selector lever to Neutral.

c) Disconnect the battery (see ) (MR 392, 80A, Battery).

d) Remove:

- the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection),
- the engine undertray,
- the battery tray (see ) (MR 392, 80A, Battery),
- the air filter unit (see Air filter unit: Removal - Refitting) (MR 392, 12A, Fuel mixture).

e) Disconnect the modular connector (1) by pulling the sliding latch (2).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a) Disconnect the gearbox connector (3) by pulling the sliding latch (4).

b) Remove the gearbox connector mounting bolts (5).

Tightening torques

<table>
<thead>
<tr>
<th>Part</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gearbox support</td>
<td>10 Nm</td>
</tr>
<tr>
<td>Gearbox connector</td>
<td>20 Nm</td>
</tr>
</tbody>
</table>
AUTOMATIC GEARBOX
Automatic gearbox connector: Removal - Refitting

- **Remove:**
  - The gearbox connector support mounting bolts (6)
  - The gearbox connector support (7)
  - The coloured connector concerned on the gearbox connector.
  - Follow the five wiring harnesses connected to the gearbox connector.
  - Remove the five harnesses (these connectors can be removed separately when replacing certain components).

**REFITTING**

- **I - REFITTING OPERATION FOR PART CONCERNED**
  - Connect the five harnesses to the gearbox connector.
  - Refit the gearbox mounting.
  - Torque tighten:
    - The gearbox support (10 Nm)
    - The gearbox connector (20 Nm)
  - Connect the gearbox connector by pushing in the slide.
  - Fasten the multifunction switch control cable.

- **II - FINAL OPERATION**
  - Refit:
    - The air filter unit (see Air filter unit: Removal - Refitting (MR 392, 12A, Fuel mixture))
    - The battery tray (see (MR 392, 80A, Battery)).
  - Connect:
    - The modular connector reinserting the sliding latch,
    - The battery (see ) (MR 392, 80A, Battery).
  - Refit:
    - The front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting (MR 393, 55A, Exterior protection, - the engine undertray,
    - The front left-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres).
REMOVAL

I - REMOVAL PREPARATION OPERATION

a Remove the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection).

a Remove the resonator on the battery.

a Disconnect the battery (see ) (MR 392, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a Disconnect the automatic transmission computer connector by pulling out the slide (1).

a Unfasten the automatic transmission computer retaining strap.

a Remove the automatic transmission computer.

If replacing the automatic transmission computer

a Determine the oil age value using parameter PR133 « Oil age counter » and make a note of the value.

a Copy the value into the memory of the new computer using command CF320 « Oil age counter transfer ».

a Confirm the entry using parameter « Oil age counter ».

a Enter the After Sales operation date using command CF320 « Enter After-Sales operation date ».

a Carry out a road test so that the new computer stores the programming.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

a Refit the computer.

a Fasten the automatic transmission computer retaining strap.

a Connect the automatic transmission computer connector by pushing in the slide.

II - FINAL OPERATION.

a Refit the front left-hand wheel arch liner (see Front wheel arch liner: Removal - Refitting) (MR 393, 55A, Exterior protection).

a Connect the battery (see ) (MR 392, 80A, Battery).
AUTOMATIC GEARBOX
Differential seal: Removal - Refitting

REMOVAL
I - REMOVAL PREPARATION OPERATION
a Place the vehicle on a two-post lift (see 02A, Lifting equipment, Vehicle: Towing and lifting).

a Remove the engine undertray.

a Remove the corresponding driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting) or (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting).

a Drain the automatic gearbox (see 23A, Automatic gearbox, Automatic gearbox oil: Draining - Filling).

II - OPERATION FOR REMOVAL OF PART CONCERNED
a Remove the faulty differential output seal using a screwdriver or a hook, taking care not to scratch the contact faces.

REFITTING
I - REFITTING OPERATION FOR PART CONCERNED
a Fit the seal using tool (Bvi. 1459) on the left-hand side or tool (Bvi. 1460) on the right-hand side.

a Guide the assembly until the tool is resting on the automatic gearbox casing.

II - FINAL OPERATION
a Refit the corresponding driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting) or (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting).

a Fill and check the gearbox oil level (see 23A, Automatic gearbox, Automatic gearbox oil: Draining - Filling).

Special tooling required
Bvi. 1459
Right-hand driveshaft outlet seal fitting tool.

Bvi. 1460
Left-hand driveshaft outlet seal fitting tool.

WARNING
Do not drop the seal spring into the automatic transmission.
AUTOMATIC GEARBOX
Converter seal: Removal - Refitting

REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
- Remove the converter by withdrawing it as far as possible without deviating from its axis.

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Remove the seal, using the tool (Bvi. 1400-01), taking care not to scratch the contact surfaces.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

- Refit the new pre-lubricated seal to the stop, using (Bvi. 1457).

- Check the positioning of the converter in relation to the engine/automatic transmission coupling face using a straightedge and a steel ruler; the value should be (X) = 18.22 mm ±±±±.

II - FINAL OPERATION


IMPORTANT

- During this operation, secure the vehicle to the lift with a strap to prevent it from becoming unbalanced.

- Note: The converter contains a large amount of oil which could escape when it is being removed.

WARNING

- Work as cleanly as possible to prevent foreign bodies from entering the system.
- Lubricate all the contact faces.

Special tooling required

Bvi. 1400-01 Tool kit for operations on Aisin Warner type automatic transmission.
Bvi. 1457 Converter lip seal fitting tool.
Driveshaft: Precautions for the repair

WARNING
A gearbox oil leak at the driveshaft may destroy it.

WARNING
Always replace seals whenever the driveshaft is removed.

WARNING
Grease the base of the bearing using BR 2+ grease to prevent the bearing from sticking.

Make sure that the O-ring is correctly positioned in the base of the relay bearing, if the bearing has one.

WARNING
Always replace the O-ring, if fitted to the bearing.

WARNING
Always replace the relay bearing support plate.

WARNING
Always replace the left-hand driveshaft locking spring ring, if the driveshaft has one.

WARNING
In order to prevent irreversible damage to the front hub bearing:
- Do not loosen or tighten the driveshaft nut when the wheels are on the ground.
- Do not place the vehicle with its wheels on the ground when the driveshaft has been loosened or removed.
REMOVAL

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
- Remove the engine undertray.
- Remove the front right-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)).

Special tooling required

- Rou. 604-01 Hub locking tool.
- Tau. 476 Ball joint extractor.

Tightening torques

- Hub nut: 280 Nm
- Shock absorber base bolts: 110 Nm
- Track rod end nut: 37 Nm
- Anti-roll bar linkage upper ball joint nut: 37 Nm
- Brake calliper support mounting bolts: 105 Nm
DRIVESHAFTS
Front left-hand driveshaft: Removal - Refitting

1. Unclip the left-hand wheel speed sensor.

2. Remove:
   - the hub nut (1), using the (Rou. 604-01)
   - the left-hand steering ball joint (4), using the (Tav. 476) at (5)
   - the left-hand upper ball joint of the anti-roll bar link-age (2)
   - the left-hand brake calliper support mounting bolts (see Front brake calliper mounting: Removal - Refitting) (MR 392, 31A, Front axle components)
   - the left-hand shock absorber lower mounting bolts (3).

3. Attach the brake calliper to the shock absorber spring.

II - REMOVAL OF PART CONCERNED

4. Pivot the stub axle carrier to separate the driveshaft from the stub axle carrier.

5. Remove the driveshaft from the gearbox.

REFITTING

I - REFITTING PART CONCERNED

6. Insert the driveshaft splines into the differential grooves.

7. Insert the drive shaft splines in the hub grooves.

8. Fit the left-hand shock absorber lower mounting bolts.

II - FINAL OPERATION

9. If equipped with the 5th injector:
   - After carrying out the operation, check that the dimension between the driveshaft and the hose for the 5th injector is at least 25mm.
   - To avoid damaging the hose.
DRIVESHAFTS
Front left-hand driveshaft: Removal - Refitting

- Fit:
  - the left-hand track rod end,
  - the left-hand upper ball joint of the anti-roll bar linkage,
  - the left-hand brake calliper support mounting bolts (see Front brake calliper mounting: Removal - Refitting) (MR 392, 31A, Front axle components).

- Tighten to torque:
  - the hub nut (280 Nm), using the (Rou. 604-01),
  - the shock absorber base bolts (110 Nm),
  - the track rod end nut (37 Nm),
  - the anti-roll bar linkage upper ball joint nut (37 Nm),
  - the brake calliper support mounting bolts (105 Nm) (see Front brake calliper mounting: Removal - Refitting) (MR 392, 31A, Front axle components).

- Refasten the clips on the wheel speed sensor.

- Refit the engine undertray.

- Refit the front left-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).
29A

Front left-hand driveshaft: Removal - Refitting

F4R, and TL4

REMOVAL

I - REMOVAL PREPARATION OPERATION

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (02A, Lifting equipment).

a Disconnect the battery (see Battery: Removal - Refitting) (80A, Battery).

a Remove:

- the engine undertray bolts,
- the engine undertray,
- the front left-hand wheel (see Wheel: Removal - Refitting) (35A, Wheels and tyres).


II - OPERATION FOR REMOVAL OF PART CONCERNED

a Remove the nut from the front left-hand driveshaft (1) using the tool (Rou. 604-01).

a Unclip the ABS sensor wiring harness (2).

a Remove the ABS sensor bolt (3).

a Move the ABS sensor to one side.

a Remove:

- the track rod nut (4),
- the track rod.

Special tooling required

Rou. 604-01
Hub locking tool.

Equipment required

safety strap(s)
component jack

Tightening torques

m front shock absorber tur-
ret bolts 21 N.m
front brake calliper bolts 170 N.m
track rod bolt 37 N.m

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Front left-hand driveshaft: Removal - Refitting

1. Remove the bolt (5) from the clip on the front brake hose.
2. Remove the front brake calliper bolts (6).
3. Move the front brake calliper away and attach it using safety strap(s) to the spring of the front shock absorber.
4. Remove the linkage nuts (7).
5. Fit a component jack to compress the front suspension.
6. Remove the linkage.
7. Remove the component jack.
8. Remove the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (56A, Exterior equipment).
29A DRIVESHAFTS
Front left-hand driveshaft: Removal - Refitting

F4R, and TL4

Remove:
- the nut (8) from the cover of the front shock absorber turret,
- the cover of the front shock absorber turret.

Loosen the bolts (9) on the front shock absorber turret.

Remove:
- the hub carrier lower shaft bolt (10),
- the bolts (11) from the pivot support.

Separate the spring - shock absorber - pivot assembly.

Remove:
- the front left-hand driveshaft from the front left-hand wheel hub,
- the front left-hand driveshaft from the gearbox.

Remove the front left-hand driveshaft using the tool (Tav. 1813).

REFITTING

I - REFITTING PREPARATION OPERATION


II - REFITTING OPERATION FOR PART CONCERNED

Fit the front left-hand driveshaft by inserting it into the gearbox then into the front wheel hub.

Refit:
- the bolts of the pivot support,
DRIVESHAFTS
Front left-hand driveshaft: Removal - Refitting

1. Torque tighten the hub carrier lower shaft bolt.
2. Fit a component jack to compress the front suspension.
3. Refit the linkage.
4. Remove the component jack.
5. Refit the linkage nuts.
6. Fit the front brake calliper.
7. Torque tighten the front brake calliper bolts (170 N.m).
8. Refit the bolt of the clip on the front brake calliper hose.
9. Position the track rod.
10. Refit the track rod nut.
11. Torque tighten the track rod bolt (37 N.m).
12. Refit:
   - the ABS sensor,
   - the ABS sensor bolt.
13. Clip the ABS sensor wiring harness.
14. Refit the driveshaft nut using the (Rou. 604-01).
15. Torque tighten the driveshaft nut (280 N.m).

III - FINAL OPERATION
1. Refit:
   - the cover of the front shock absorber turret,
   - the nut for the cover of the front shock absorber turret,
   - the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (56A, Exterior equipment),
   - the front left-hand wheel (see Wheel: Removal - Refitting) (35A, Wheels and tyres).
3. Refit the engine undertray.
4. Connect the battery (see Battery: Removal - Refitting) (80A, Battery).
REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).
- Remove the engine undertray.
- Remove the front right-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).

**Special tooling required**
- Rou. 604-01 Hub locking tool.
- T av. 476 Ball joint extractor.

**Tightening torques**
- Driveshaft relay bearing bracket mounting bolts: 21 Nm
- Hub nut: 280 Nm
- Shock absorber base bolts: 110 Nm
- Track rod end nut: 37 Nm
- Anti-roll bar linkage upper ball joint nut: 37 Nm
- Brake calliper support mounting bolts: 105 Nm
Front right-hand drivehaft - Removal - Refitting

JH3 or JR5 – K4M or K9K or M4R, and TL4

1. Unclip the right-hand wheel speed sensor.
2. Remove:
   - the hub nut (1) using the (Round 604-01),
   - the anti-roll bar linkage right-hand upper ball joint (2),
   - the right-hand track rod end (4), using the (Tool 476) at (5),
   - the right-hand brake calliper support mounting bolts (see Front brake calliper mounting: Removal - Refitting) (MR 392, 31A, Front axle components),
   - the right-hand shock absorber lower mounting bolts (3).
3. Attach the brake calliper to the shock absorber spring.
4. Remove:
   - the driveshaft relay bearing bracket mounting bolts (6),
   - the driveshaft relay bearing bracket.
Front right-hand driveshaft: Removal - Refitting

JH3 or JR5 – K4M or K9K or M4R, and TL4

29A

Remove:
- the driveshaft relay bearing bracket mounting bolts (7),
- the driveshaft relay bearing bracket.

a Remove the driveshaft relay bearing bracket mounting bolt (8).

II - REMOVAL OF PART CONCERNED
- Pivot the driveshaft relay bearing bracket to separate the driveshaft from the stub axle carrier.
- Remove the driveshaft from the gearbox.

REFITTING
I - REFITTING PREPARATION OPERATION
- Check the condition of the lip seal mating face on the driveshaft.

WARNING
- Do not refit a driveshaft if the lip seal mating face is damaged.
DRIVESHAFTS
Front right-hand driveshaft: Removal - Refitting

II - REFITTING PART CONCERNED

a. Engage the driveshaft splines with the differential splines as straight as possible, so as not to damage the seal.

a. Engage the driveshaft splines with the hub splines.

III - FINAL OPERATION.

a. Tighten to torque:
   - the driveshaft relay bearing bracket mounting bolts (21 Nm),
   - the hub nut (280 Nm), using the (Rou. 604-01),
   - the shock absorber base bolts (110 Nm),
   - the track rod end nut (37 Nm),
   - the anti-roll bar linkage upper ball joint nut (37 Nm),
   - the brake calliper support mounting bolts (105 Nm) (see Front brake calliper mounting: Removal - Refitting) (MR 392, 31A, Front axle components).

a. Refasten the clips on the wheel speed sensor.

a. Top up the gearbox (see Manual gearbox oils: Draining - Filling, page 21A-3).

a. Refit the engine undertray.

a. Refit the front right-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).
DRIVESHAFTS
Front right-hand driveshaft: Removal - Refitting

I - REMOVAL PREPARATION OPERATION

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
- Remove the engine undertray.
- Remove the front right-hand wheel (see Wheel: Removal - Refitting (MR 392, 35A, Wheels and tyres)).

Special tooling required
- Rou. 604-01 Hub locking tool.
- Tav. 476 Ball joint extractor.

Tightening torques
- drive shaft relay bearing bracket mounting bolt: 21 Nm
- hub nut: 280 Nm
- shock absorber base bolts: 110 Nm
- track rod end nut: 37 Nm
- anti-roll bar linkage upper ball joint nut: 37 Nm
- brake calliper support mounting bolts: 105 Nm
Front right-hand driveshaft: Removal - Refitting

- Unclip the right-hand wheel speed sensor.
- Remove:
  - the hub nut (1) using the (Rou. 604-01),
  - the anti-roll bar linkage right-hand upper ball joint (2),
  - the right-hand track rod end (4) , using the (Tav. 476)
at (5),
  - the right-hand brake calliper support mounting bolts (see Front brake calliper mounting: Removal - Refitting) (MR 392, 31A, Front axle components),
  - the right-hand shock absorber lower mounting bolts (3),
- Attach the brake calliper to the shock absorber spring.
- Remove the driveshaft relay bearing bracket mounting bolt (6).

II - REMOVAL OF PART CONCERNED
- Pivot the stub axle carrier to separate the driveshaft from the stub axle carrier.
- Remove the driveshaft from the gearbox.

REMOVAL II - REFITTING PART CONCERNED
- Insert the driveshaft splines into the differential grooves.
- Insert the drive shaft splines in the hub grooves.
- Fit:
  - the right-hand shock absorber lower mounting bolts,
  - the driveshaft relay bearing bracket.
- Refit the driveshaft relay bearing bracket mounting bolt (6).

II - FINAL OPERATION
- Fit:
  - the right-hand track rod end,
DRIVESHAFTS

Front right-hand driveshaft: Removal - Refitting

- The anti-roll bar linkage right-hand upper ball joint,
- the right-hand brake calliper support mounting bolts (see Front brake calliper mounting: Removal - Refitting) (MR 392, 31A, Front axle components).

- Torque tighten:
  - the driveshaft relay bearing bracket mounting bolt (21 Nm)
  - the hub nut (280 Nm), using the (Rou. 604-01)
  - the shock absorber base bolts (110 Nm)
  - the track rod end nut (37 Nm)
  - the anti-roll bar linkage upper ball joint nut (37 Nm)
  - the brake calliper support mounting bolts (105 Nm) (see Front brake calliper mounting: Removal - Refitting) (MR 392, 31A, Front axle components).

- Refasten the clips on the wheel speed sensor.
- Refit the engine undertray.
- Refit the front right-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).
**Front right-hand driveshaft: Removal - Refitting**

**F4R, and TL4**

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**REMOVAL**

- I - REMOVAL PREPARATION OPERATION
  - Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).
  - Disconnect the battery (see Battery: Removal - Repeating) (MR 392, 80A, Battery).
  - Remove:
    - the engine undertray,
    - the front right-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).

- II - OPERATION FOR REMOVAL OF PART CONCERNED
  - Remove the driveshaft nut using the (Rou. 604-01).
  - Unclip the ABS sensor wiring harness (1).
  - Remove the ABS sensor mounting bolt (2).
  - Move the ABS sensor to one side.

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**Special tooling required**

- Rou. 604-01: Hub locking tool.

**Equipment required**

- Component jack

**Tightening torques**

- Driveshaft relay bearing support plate mounting bolts: 21 Nm
- Brake calliper mounting bolts: 170 Nm
- Track rod mounting bolt: 37 Nm
- Driveshaft nut: 280 Nm
29A

- Remove the track rod mounting nut (3).
- Remove the track rod.
- Remove the calliper hose mounting bolt (4).
- Remove the brake calliper mounting bolts (5).
- Remove the brake calliper and strap it up (see Front brake calliper: Removal - Refitting) (MR 392, 31A, Front axle components).
- Remove the linkage nuts (6).

116761
116764
116769
116771
Fit a component jack to compress the suspension.

Remove the linkage.

Remove the component jack.

Remove the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 55A, Exterior protection).

Remove:
- the turret cover mounting nut (7),
- the turret cover.

Loosen the turret mounting bolts (8).

Remove:
- the hub carrier lower axis locking bolt (9),
- the mounting bolts (10) from the pivot mounting.

Remove the "spring - shock absorber - pivot" assembly.

Extract the hub driveshaft.
DRIVESHAFTS

Front right-hand driveshaft: Removal - Refitting

F4R, and TL4

1. Remove the right-hand driveshaft relay bearing support plate mounting bolts (11).

2. Extract the driveshaft from the gearbox.

3. Remove the right-hand driveshaft.

REFITTING

I - REFITTING PREPARATIONS OPERATION


II - REFITTING OPERATION FOR PART CONCERNED

5. Fit the driveshaft by inserting it into the gearbox and then the hub carrier.

6. Refit:
   - the driveshaft relay bearing support plate,
   - the driveshaft relay bearing support plate mounting bolts.

7. Torque tighten the driveshaft relay bearing support plate mounting bolts (21 Nm).

8. Refit:
   - the pivot mounting bolts,
   - the hub carrier lower axis locking bolt.

9. Fit a component jack to compress the suspension.

10. Refit the linkage.

11. Remove the component jack.

12. Refit the linkage mounting bolts.

13. Refit the brake calliper mounting bolts.

14. Tighten to torque the brake calliper mounting bolts (170 Nm).

15. Refit the calliper hose mounting bolt.

16. Position the track rod.

17. Refit the track rod mounting nut.

18. Tighten to torque the track rod mounting bolt (37 Nm).

19. Refit the ABS sensor.

20. Clip the ABS sensor wiring harness.

21. Refit the driveshaft nut using the (Rou. 604-01).

22. Tighten to torque the driveshaft nut (280 Nm).

III - FINAL OPERATION

23. Refit:
   - the turret cover,
   - the turret cover mounting nut,
   - the scuttle panel grille (see Scuttle panel grille: Removal - Refitting) (MR 393, 55A, Exterior protection),
   - the front right-hand wheel (see Wheel: Removal - Refitting) (MR 392, 35A, Wheels and tyres).


25. Refit the engine undertray.

26. Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

WARNING

Always replace the differential output lip seal with a new one whenever the driveshafts are removed.
Relay shaft bearing: Removal - Refitting

M4R, and TL4

REMOVAL

I - REMOVAL PREPARATION Operation

a Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).

a Disconnect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

a Remove the front right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).

II - REMOVAL OF PART CONCERNED

Removing the relay shaft bearing

a Remove the lock ring (7) from the bearing (8).

a Extract the bearing (8) using a press and an extractor.

a Take care not to scratch the contact surface of the lip seal on the relay shaft (9).

REFITTING

I - REFITTING PART CONCERNED

a Lubricate the contact surface of the shaft into which the bearing is inserted.

a Insert the new bearing.

a Fit the bearing to the end using a tube, so that it rests on the inner bearing race.

a Fit a new lock ring.

a Clean and grease the bearing hole into which the bearing will be inserted.

II - FINAL OPERATION.

a Refit the front right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).

a Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).
REMOVAL

I - REMOVAL PREPARATION OPERATION

a. Remove the driveshaft on the side concerned (see Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9) or (see Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).

II - OPERATION FOR REMOVAL OF PART CONCERNED

a. Cut the clips taking care not to damage the groove of the stub axle bowl.

a. Push back the gaiter to release the stub axle bowl.

a. Remove the stub axle bowl (1) using the (Tav. 1796) (2) and the extractor (Emb. 880) (3).

a. Remove:
   - the locking spring ring (4),
   - the gaiter (5).

a. Remove as much grease as possible from the stub axle bowl.

Special tooling required

Tav. 1796 Driveshaft bowl-shaped spindle extractors

Emb. 880 Pin extractor tool.

Tav. 1784 Pliers for the driveshaft gaiter collar.

Tav. 1168 “Clic” type clip pliers for driveshafts with a thermoplastic gaiter.
Front driveshaft gaiter, wheel side: Removal - Refitting

I. REFITTING OPERATION FOR PART CONCERNED

- Use:
  - (Tav. 1784) for the clip with profile end (6)
  - (Tav. 1168) for the jubilee type clip (7)

- Always replace the locking spring ring (8) each time the stub axle bowl is removed.

- Fit the small clip.

- Fit the gaiter.

- Spread the quantity of grease around the gaiter and the stub axle bowl.

- Insert the lips of the gaiter into the grooves of the stub axle bowl and propeller shaft.

- Fit the head.
Fit the clips, tightening them using the (Tav. 1784) or the (Tav. 1168) depending on the type of clip.

II - FINAL OPERATION.

Refit the driveshaft on the side concerned (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9) or (see 29A, Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).
DRIVESHAFTS

Front right-hand driveshaft gaiter, gearbox side: Removal - Refitting

- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting (MR 392, 02A, Lifting equipment)).
- Disconnect the battery (see Battery: Removal - Replacing (MR 392, 80A, Battery)).
- Remove the front right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).

II - OPERATION FOR REMOVAL OF PART CONCERNED

- Cut the ring (8) and the tightening clip (6) using cutting pliers or a metal saw, taking care not to damage the yoke sleeve.
- Push back the gaiter (5) to release the driveshaft yoke sleeve.
- Remove as much grease as possible.
- Remove the driveshaft yoke sleeve (3).

Special tooling required

T av. 1168 "Clic" type clip pliers for driveshafts with a thermostanic gaiter.

WARNING
Never use thinners to clean the components.

Note:
- Since the driveshaft yoke sleeve does not have a stop tab, it can be removed without being forced.
- Do not remove the rollers from their respective bushings as the rollers and needles are matched and should never be interchanged.
Front right-hand driveshaft gaiter, gearbox side. Removal - Refitting

**DRIVE SHAFTS**

**Removal**

- a Remove the lock ring (7) using the tool.
- a Extract the spider (9) using a press and a releasing type extractor.
- a Remove the propeller shaft gaiter.

**Refitting**

- a Fit the small tightening clip (6) to the propeller shaft.
- a Slightly lubricate the propeller shaft to facilitate fitting the gaiter.
- a Refit the propeller shaft gaiter.
- a Refit the spider (9) in the position marked during removal.

**Note:** Mark the position of the spider before extracting it.
DRIVESHAFTS
Front right-hand driveshaft gaiter: Removal - Refitting

- Refit the retaining lock ring (7) or crimp at three points at 120˚ by folding the metal of the splines down onto the propeller shaft.
- Lubricate the driveshaft yoke sleeve (3).
- Fit the driveshaft yoke sleeve (3) onto the spider.
- Divide the quantity of grease between the gaiter (5) and the driveshaft yoke sleeve (3).
- Position the lips of the gaiter (5) in the grooves of the driveshaft yoke sleeve and the propeller shaft.
- Insert a smooth rod with a rounded end between the gaiter and propeller shaft to control the amount of air inside the joint.
- Refit the clips, tightening with tool (Tav. 1168).

II - FINAL OPERATION.
- Refit the front right-hand driveshaft (see 29A, Driveshafts, Front right-hand driveshaft: Removal - Refitting, page 29A-9).
- Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

Note: Be sure to observe the prescribed quantity.
REMOVAL
I - REMOVAL PREPARATION OPERATION
- Position the vehicle on a two-post lift (see Vehicle: Towing and lifting) (MR 392, 02A, Lifting equipment).
- Disconnect the battery (see Battery: Removal - Re- fitting) (MR 392, 80A, Battery).
- Remove the front left-hand driveshaft (see Driveshafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).

II - OPERATION FOR REMOVAL OF PART CONCERNED
- Cut the clip (1) and tightening ring (2) using cutting pliers or a metal saw, taking care not to damage the driveshaft yoke sleeve.
- Push back the gaiter (7) to release the driveshaft yoke sleeve.
- Remove as much grease as possible.
- Remove the driveshaft yoke sleeve (4).

Special tooling required
AV. 1168 “Clic” type clip pliers for driveshafts with a thermostatic gaiter.
Front left-hand driveshaft gaiter, gearbox side: Removal - Refitting

1. Remove the lock ring (9).
2. Extract the spider (8) using a press and a releasing type extractor.
3. Remove the propeller shaft gaiter.

REFITTING

1. Fit the small tightening clip (1) to the propeller shaft.
2. Slightly lubricate the driveshaft to facilitate fitting gaiter (7).
3. Refit the spider (8) in the position marked during removal.

Note: Mark the position of the spider before extracting it.
Refit the lock ring (9).
Lubricate the driveshaft yoke sleeve (4).
Fit the driveshaft yoke sleeve (4) onto the spider.
Divide the quantity of grease between the gaiter (7) and the driveshaft yoke sleeve (4).
Position the lips of the gaiter (7) in the grooves of the driveshaft yoke sleeve and the propeller shaft.
Insert a smooth rod with a rounded end between the gaiter and propeller shaft to control the amount of air inside the joint.
Fit the clips, tightening with the (Tav. 1168).
II - FINAL OPERATION.
Refit the front left-hand driveshaft (see 29A, Drive shafts, Front left-hand driveshaft: Removal - Refitting, page 29A-2).
Connect the battery (see Battery: Removal - Refitting) (MR 392, 80A, Battery).

Note: Be sure to observe the prescribed quantity of lubricant (see ).