RENAULT

2 Transmission

20A CLUTCH

21A MANUAL GEARBOX

21B SEQUENTIAL GEARBOX

29A DRIVESHAFTS

X44

NOVEMBER 2009 **EDITION ANGLAISE**

TWINGO - Chapitre 2

Contents

Contents

Clutch: Precautions for the repair

Special tooling required	
Emb. 1518	Set of clutch plate centring mandrels
Emb. 1780	Set of clutch plate centring mandrels.

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).

WARNING

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

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.

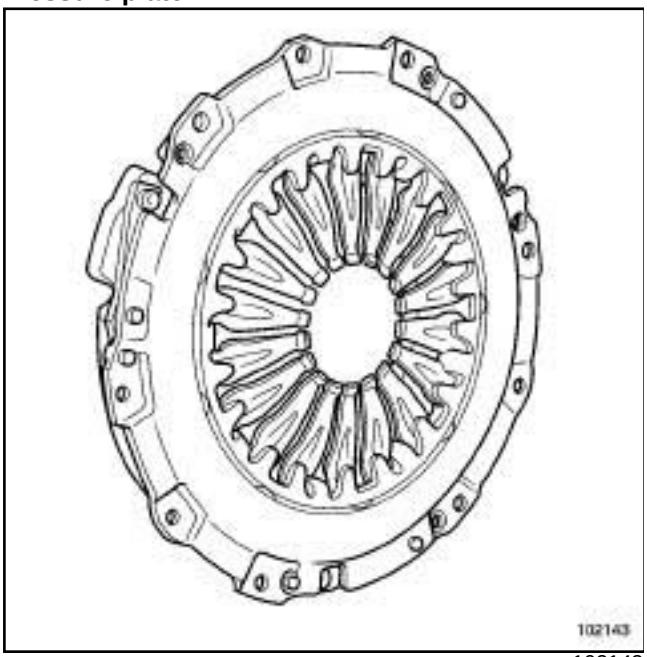
After refitting, check:

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

D4F – D7F – K9K – K4M

D4F – D7F

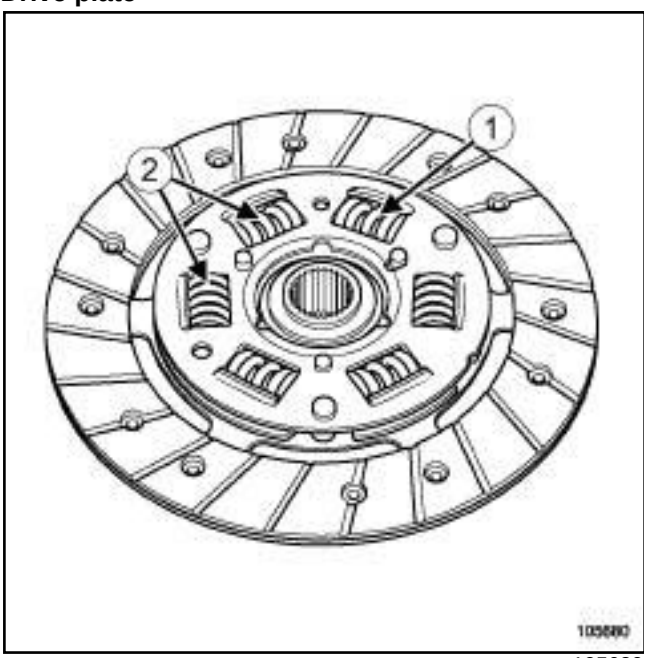
Pressure plate



102143

Pressure plate part no.: **180 CPOE 3300**

Drive plate



105680

Plate external diameter: **181.5 mm**

Plate thickness: **6.7 mm**

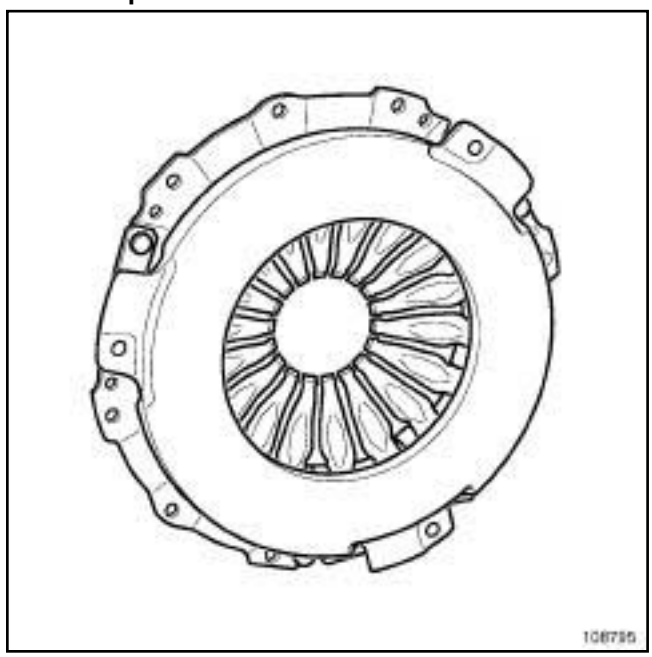
Number of grooves: **26**

Colour of springs (**1**) : Grey

Colour of springs (**2**) : Black

K9K

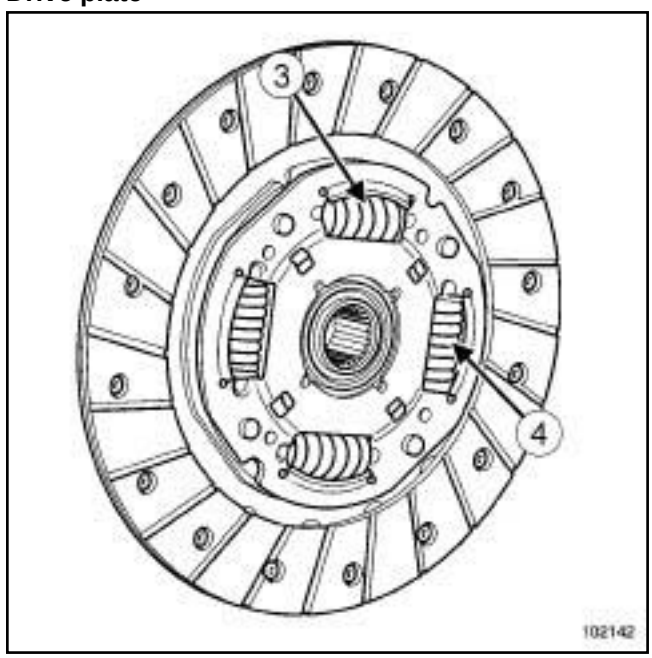
Pressure plate



108795

Pressure plate part no.: **215 CPOVK 4400**

Drive plate



102142

Plate outer diameter: **215 mm**

Plate thickness: **6.9 mm**

Clutch: Specifications

D4F – D7F – K9K – K4M

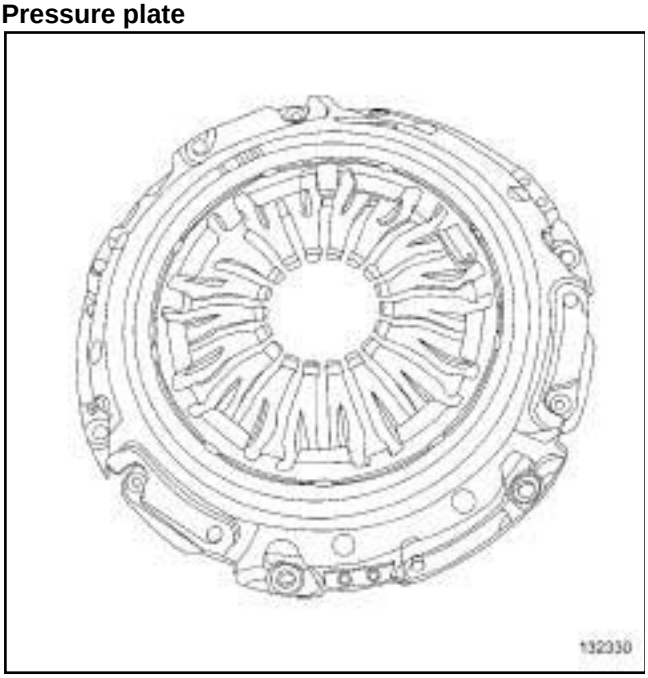
Number of grooves: **26**

Colour of springs (**3**) : Red and Black

Colour of springs (**4**) : Grey

K4M

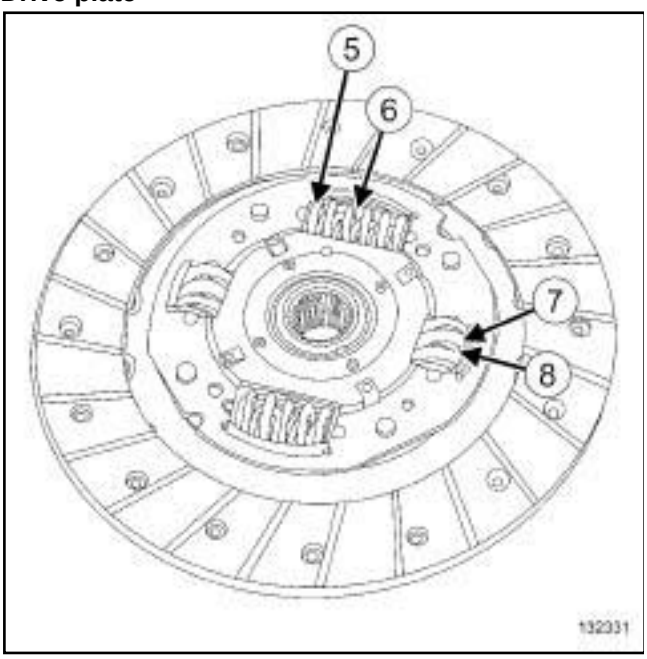
Pressure plate



132330

Pressure plate part no.: **215 CPOE 4350**

Drive plate



132331

Plate outer diameter: **215 mm**

Plate thickness: **6.9 mm**

Number of grooves: **26**

Spring colour (**5**) : Moss green

Spring colour (**6**) : Light blue

Spring colour (**7**) : Green

Spring colour (**8**) : Capri blue

D4F – D7F – K9K

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

Tightening torques ▽	
clutch pressure plate bolts (D4F and D7F engines)	**20 Nm**
clutch pressure plate bolts (K9K engine)	**15 Nm**

REMOVAL

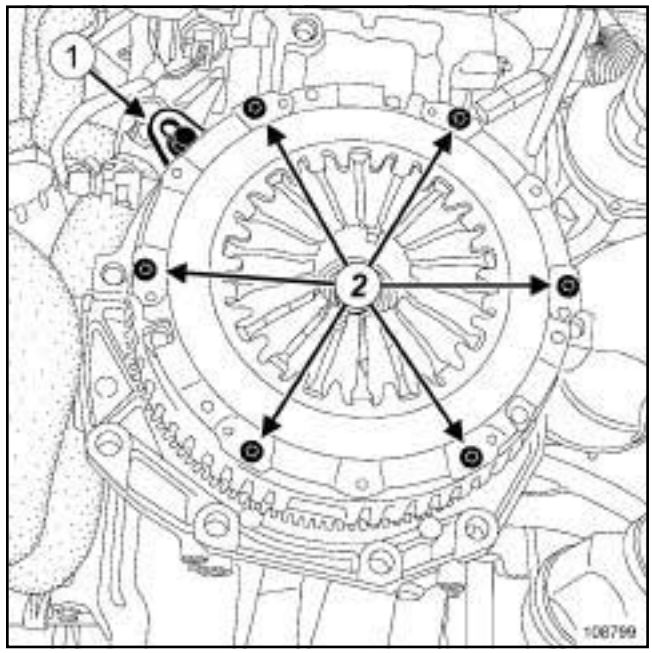
I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❏ Remove the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



108799

❏ Lock the engine using tool **(Mot. 582-01)** (**1**) .

❏ Remove:

- the pressure plate bolts (**2**) ,
- the pressure plate and friction plate.

REFITTING

I - REFITTING PREPARATIONS OPERATION

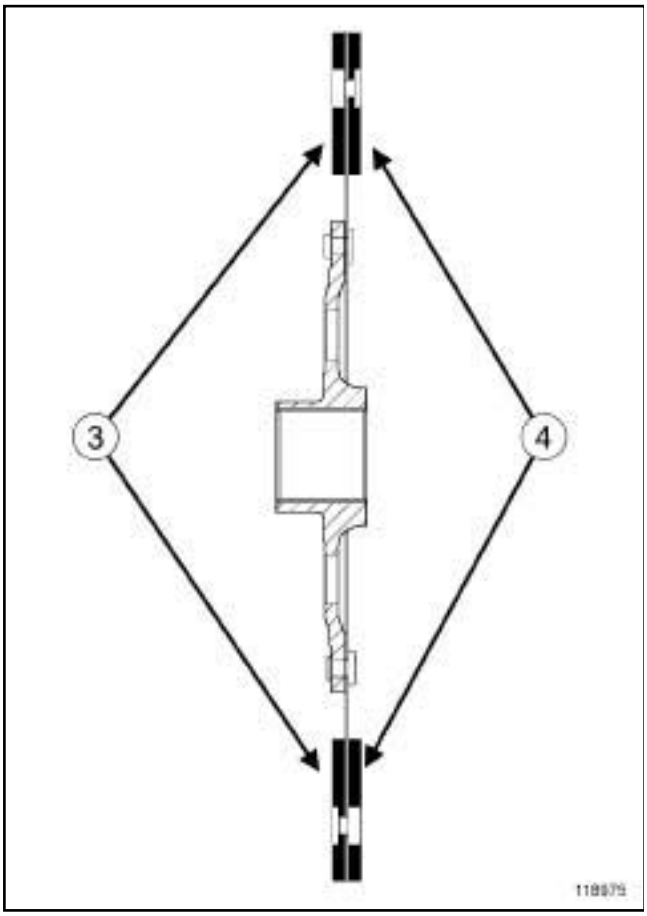
❏ Degrease the flywheel friction face.

❏ Clean the clutch shaft splines.

D4F – D7F – K9K

II - REFITTING OPERATION FOR PART CONCERNED

K9K

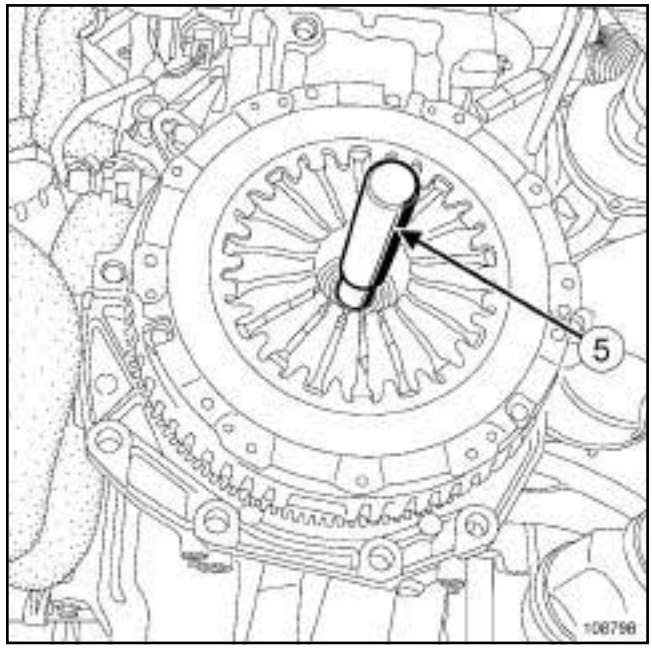


118975

❑ Position the clutch plate, face (**3**) against the flywheel, face (**4**) against the clutch pressure plate.

D4F – D7F

❑ Position the clutch driven plate.



108798

❑ Centre the clutch plate using tool **(Emb. 1780)** (**5**) .

❑ Refit:

- the clutch pressure plate,
- the clutch pressure plate bolts by gradually tightening them in a radial pattern.

D4F – D7F

❑ Torque tighten the **clutch pressure plate bolts (D4F and D7F engines) (20 Nm)**.

K9K

❑ Torque tighten the **clutch pressure plate bolts (K9K engine) (15 Nm)**.

❑ Remove the **(Emb. 1780)** and **(Mot. 582-01)**.

III - FINAL OPERATION.

❑ Refit the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

❑ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

K4M

Special tooling required	
Mot. 1677	Flywheel locking tool.
Emb. 1780	Set of clutch plate centring mandrels.

Tightening torques ▽	
clutch pressure plate bolts	**23 N.m**

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 bolts,
- the engine undertray,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery)
- the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- 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).

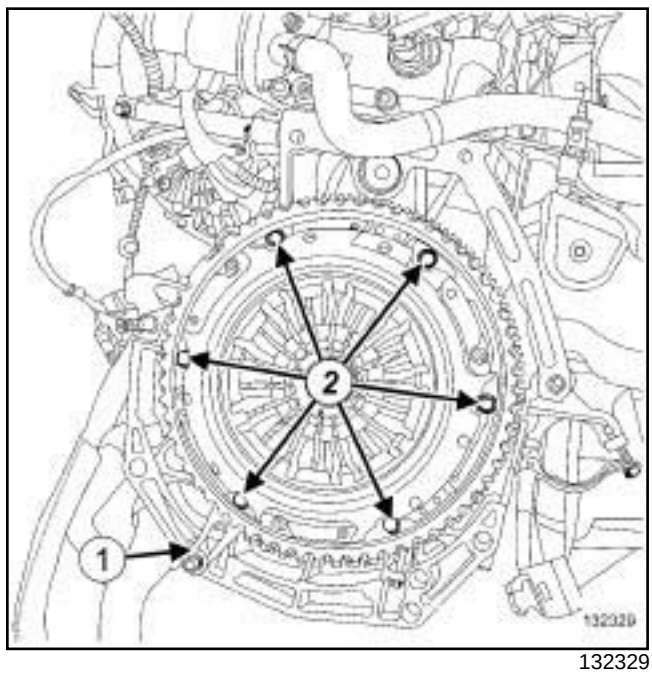
❏ Drain:

- the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) ,
- the engine cooling system (see **Cooling system: Draining - Refilling**) (19A, Cooling),
- the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❏ Remove:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
- the front left-hand driveshaft (see **29A**, **Driveshafts**, **Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) ,
- the front right-hand driveshaft (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) .
- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals),
- the manual gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132329

❏ Position the **(Mot. 1677)** (**1**) .

❏ Remove:

- the clutch pressure plate bolts (**2**) ,
- the clutch pressure plate,
- the clutch plate.

K4M

REFITTING

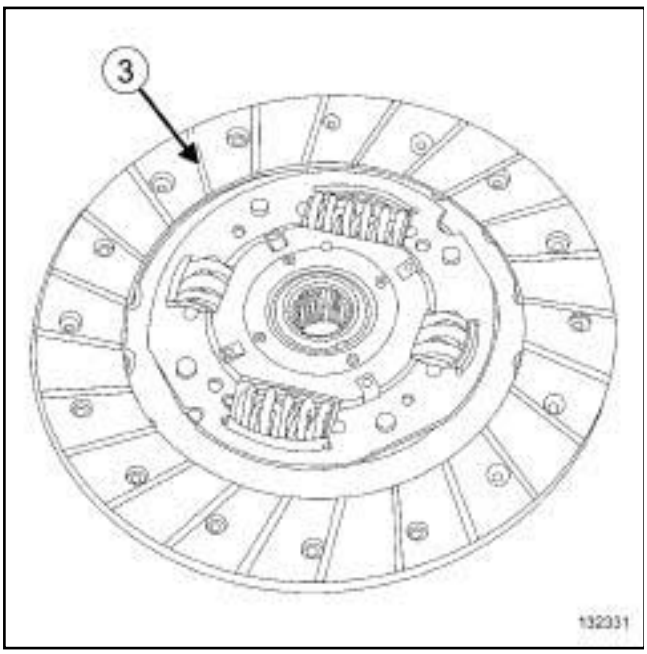
I - REFITTING PREPARATION OPERATION

❑ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products) to clean and degrease:

- the flywheel friction face,
- the clutch shaft splines.

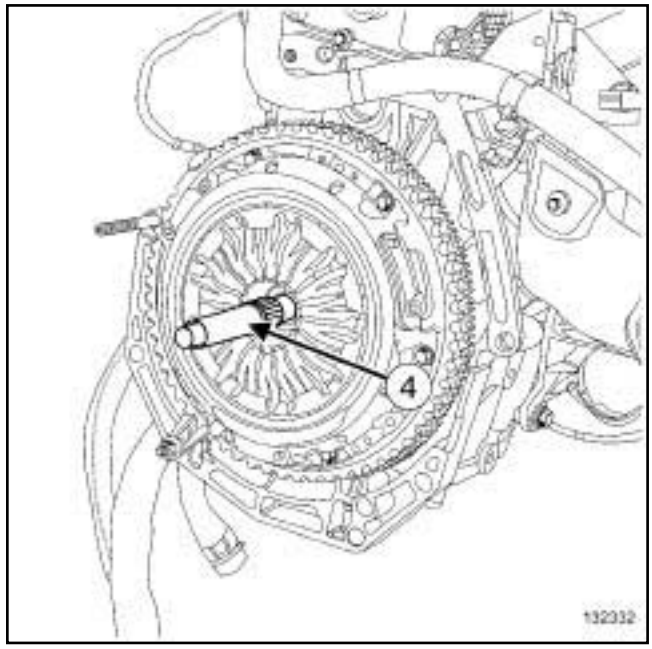
WARNING
Do not grease the clutch shaft splines.

II - REFITTING OPERATION FOR PART CONCERNED



132331

❑ Fit the clutch plate, with the face (**3**) to the clutch pressure plate end.



132332

❑ Centre the clutch plate using the **(Emb. 1780)** (**4**) .

❑ Refit:

- the clutch pressure plate,
- the clutch pressure plate bolts by gradually tightening them in a radial pattern.

❑ Torque tighten the **clutch pressure plate bolts (23 N.m)**.

❑ Remove the **(Emb. 1780)** and **(Mot. 1677)**.

III - FINAL OPERATION.

❑ Refit:

- the manual gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) ,
- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals),
- the front right-hand driveshaft (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) .
- the front left-hand driveshaft (see **29A**, **Driveshafts**, **Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) ,
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

K4M

❏ Refill:

- the engine cooling system (see **Cooling system: Draining - Refilling**) (19A, Cooling),
- the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) ,
- the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❏ Refit:

- 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),
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the air filter box (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery)
- the engine undertray.

JH3 or JR5

Tightening torques ▽	
clutch thrust bearing bolts (JH3)	**21 N.m**
clutch thrust bearing bolts (JR5)	**25 N.m**

Note:

The clutch thrust bearing cannot be separated from the clutch slave cylinder.

REMOVAL

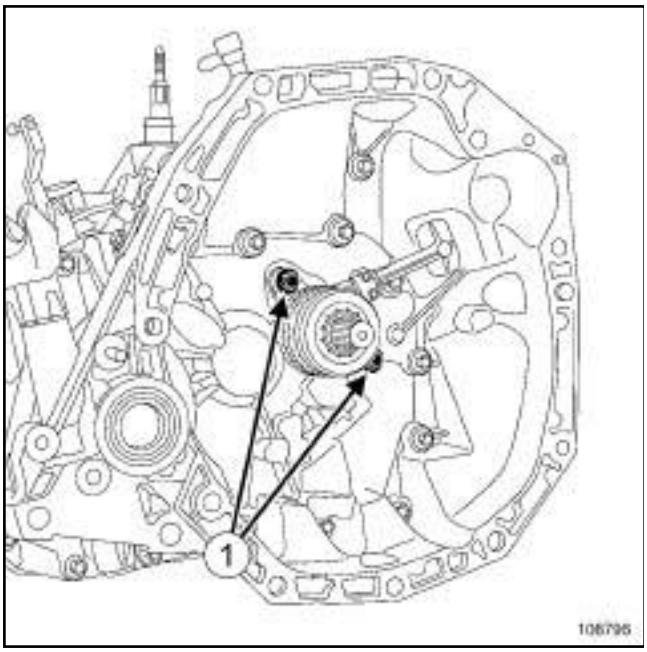
I - REMOVAL PREPARATION OPERATION

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

❑ Remove:

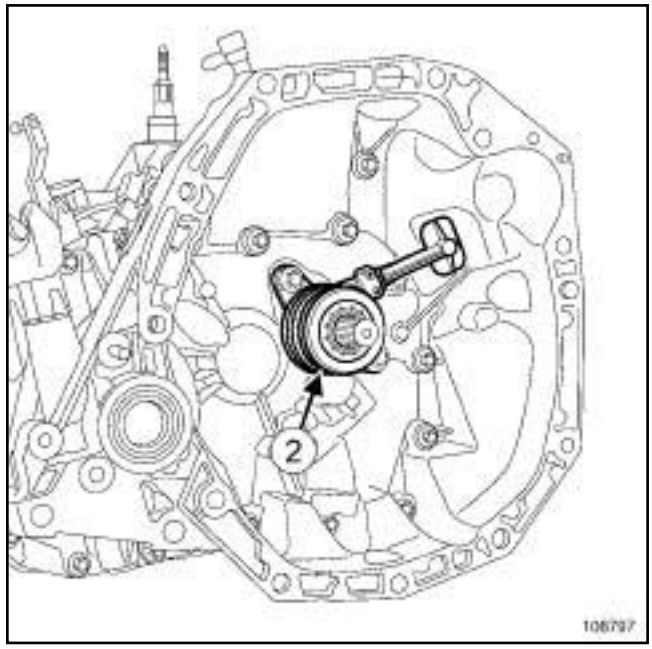
- the engine undertray bolts,
- the engine undertray,
- the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



108796

❑ Remove the clutch thrust bearing bolts (**1**) .



108797

❑ Remove the clutch thrust bearing (**2**) .

WARNING

Prepare for the flow of fluid, and protect the surrounding components.

REFITTING

I - REFITTING PREPARATION OPERATION

❑

WARNING

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

WARNING

Never operate the system when the slave cylinder is removed (even if it is connected to the clutch pedal). There is a risk that the hydraulic piston and the slave cylinder stop will be ejected.

Note:

To obtain optimum bleeding, pre-fill the clutch thrust bearing when refitting the thrust bearing.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the clutch thrust bearing.

JH3 or JR5

JH3

❑ Torque tighten the **clutch thrust bearing bolts (JH3) (21 N.m)**.

JR5

❑ Torque tighten the **clutch thrust bearing bolts (JR5) (25 N.m)**.

III - FINAL OPERATION.

❑ Refit the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

❑ Bleed the clutch control (see **Clutch circuit: Bleed**) (37A, Mechanical component controls).

❑ Refit the engine undertray.

JB1

REMOVAL

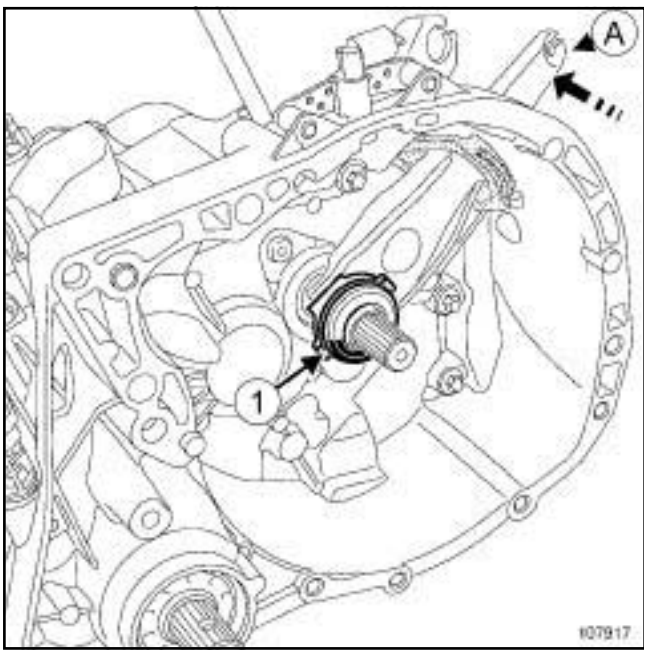
I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❑ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

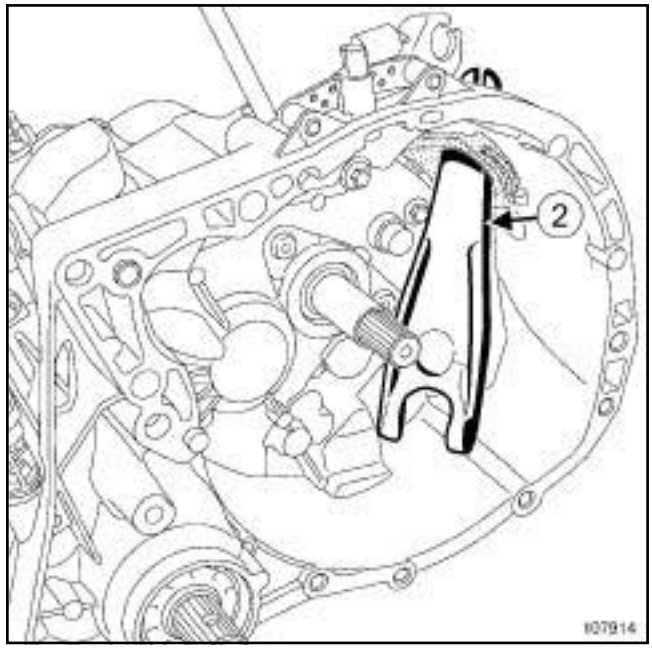
❑ Remove the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



107917

❑ Remove the clutch thrust bearing (**1**) by tilting the fork at (**A**) .



107914

❑ Remove the fork (**2**) by pulling it towards the inside of the clutch housing.

REFITTING

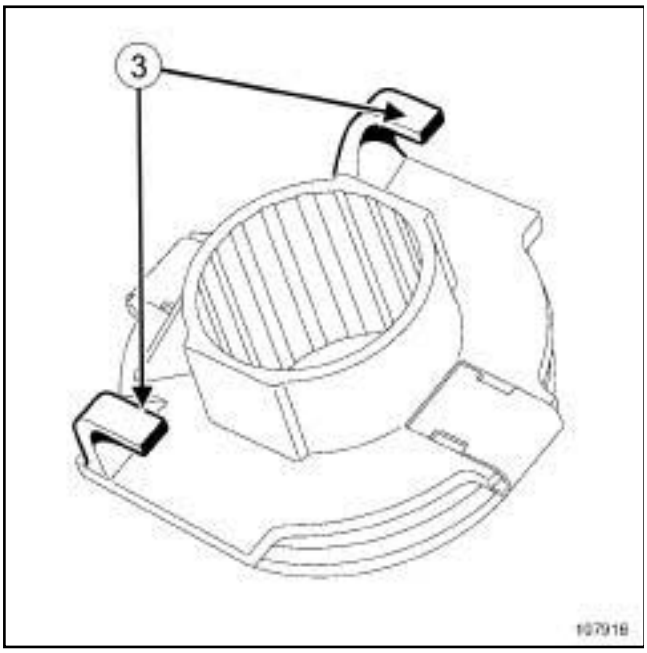
I - REFITTING PREPARATIONS OPERATION

❑ Check that there are no leaks from the input shaft, replace the guide tube if necessary (see **21A**, **Manual gearbox**, **Input shaft lip seal: Removal - Refitting**, page **21A-41**) .

❑ Coat the walls of the guide tube and the fork pads with **BR2+ GREASE**.

JB1

II - REFITTING OPERATION FOR PART CONCERNED



107916

❏ Refit the fork.

❏ Refit:

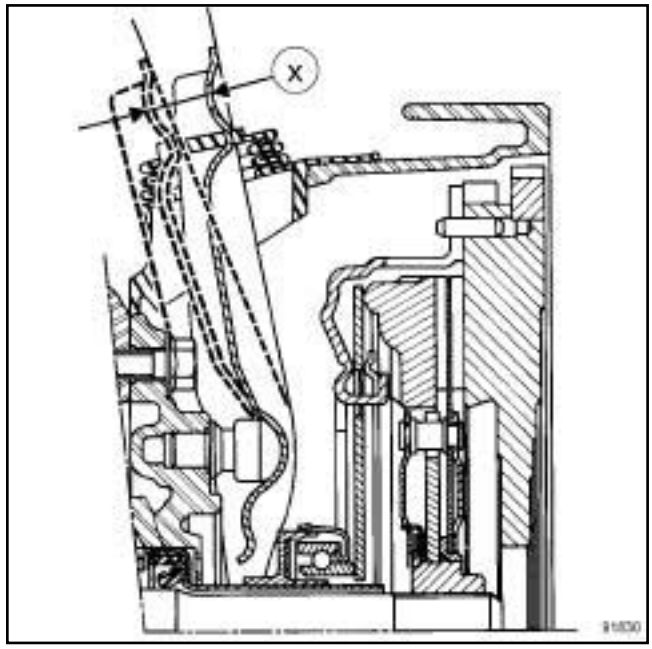
- the fork,
- the stop on the guide tube, placing the hooks (**3**) into the fork.

❏ Ensure that it slides correctly.

> Note:
>
> During operations where the gearbox does not have to be removed or refitted, do not lift the fork because this may cause the hooks to come out (**3**) of the thrust bearing.

III - FINAL OPERATION.

❏ Refit the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .



91830

❏ After refitting the gearbox, check the travel (**X**) of the fork.

This must be:

- D4F engine: **x = 29.5 mm ±0.5**,
- D7F engine: **x = 29.5 mm ±0.5**.

❏ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

5-SPEED MANUAL GEARBOX

I - GEARBOX TYPE/OIL TYPE CORRELATIONS:

GEARBOX TYPE	TYPE OF OIL FOR GEARBOX
JBX JCX JRX JHX NDX TLX	TRANSELF TRJ 75W80 or TRANSELF NFJ 75W80
PKX PFX VMX NEX NGX N0X UNX	TRANSELF TRX 75W80 or TRANSELF NFP 75W80
ZFX	TRANSELF LD 75W80

Component identification:

The third character **X** corresponds to the figure written on the identification plate and therefore covers the entire manual gearbox range.

II - STANDARDS AND PART NUMBERS OF THE VARIOUS RECOMMENDED OILS:

DESIGNATION	STANDARD	PART NUMBER
TRANSELF TRX 75W80 or TRANSELF NFP 75W80	APIGL4, MIL-L-2105 C or D	**77 11 143 534** (5 litres)
TRANSELF TRJ 75W80 or TRANSELF NFJ 75W80	APIGL4, MIL-L-2105 C or D	May be ordered from ELF
TRANSELF LD 75W80	APIGL4, MIL-L-2105	May be ordered from ELF

III - IDENTIFICATION OF OIL FOR STANDARD EXCHANGE PK1 GEARBOXES:

Note:

For standard exchange PK1 gearboxes, the oil type (TRZ or TRP) is shown on a label.

These two oils are replaced by TRX 75W80 or NFP 75W80.

JB1 or JH3 or JR5

Equipment required
oil recovery tray

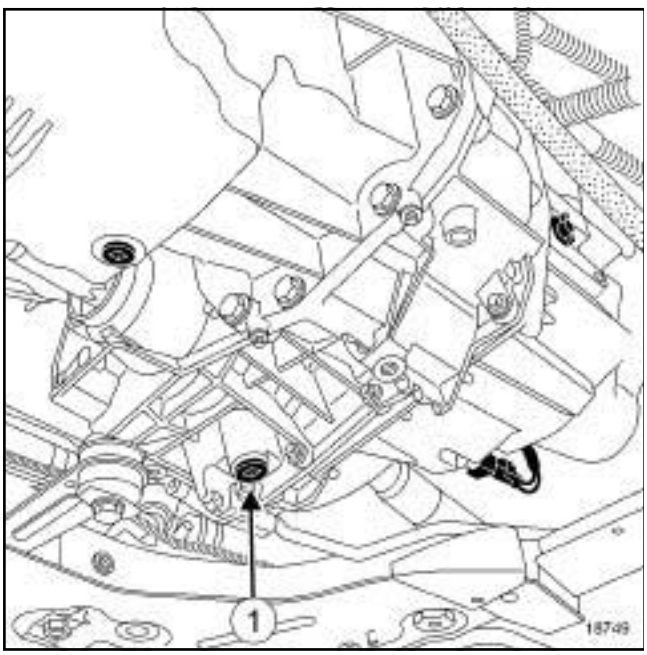
Gearbox	Capacity (l)
JB1	3.4
JH3	2.8
JR5	2.3

DRAINING

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

❏ Remove the engine undertray.

❏ Fit a **oil recovery tray** under the gearbox.



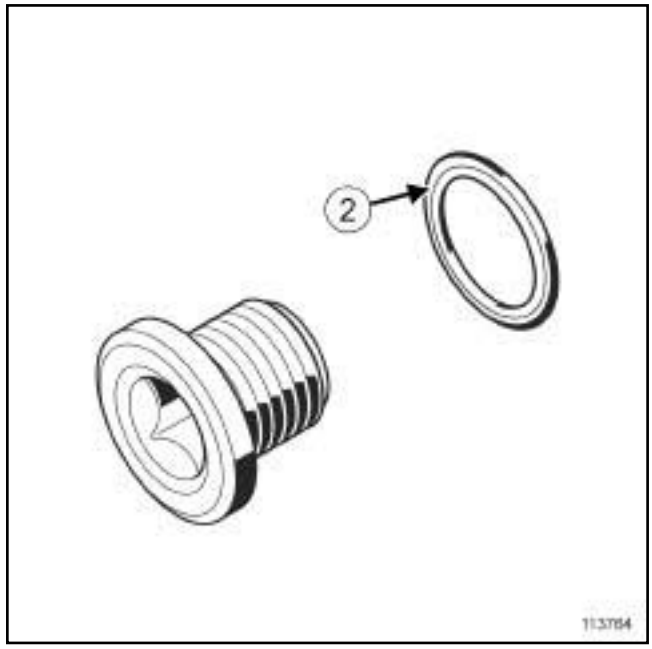
18749

❏ Remove the drain plug (**1**) .

❏ Let the oil run into the **oil recovery tray**.

FILLING

❏ **parts always to be replaced: mechanism housing drain plug seal**.



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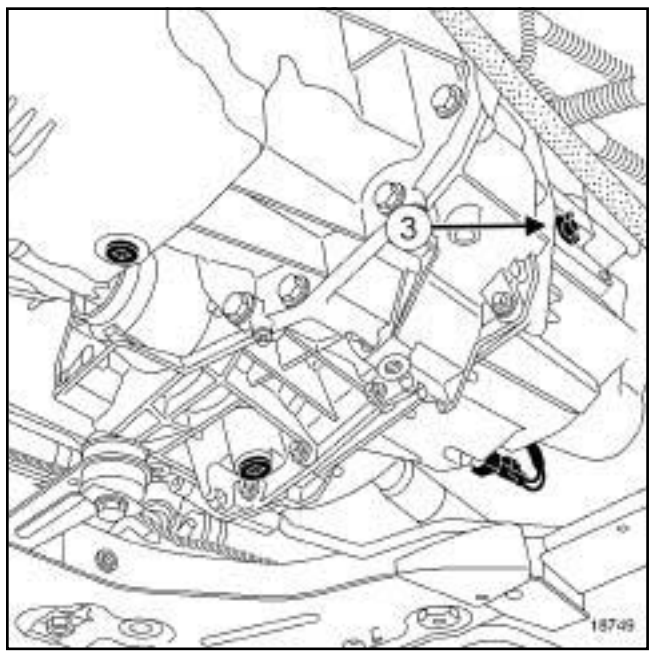
❏ Refit a new seal on the drain plug with the groove (**2**) facing the plug.

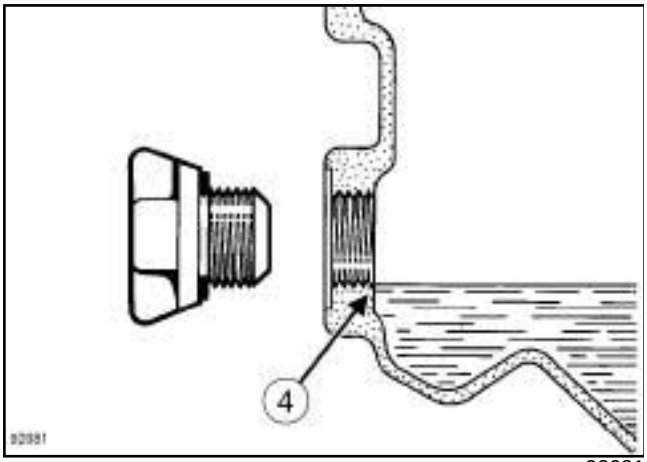
❏ Refit the drain plug fitted with its new seal.



18749

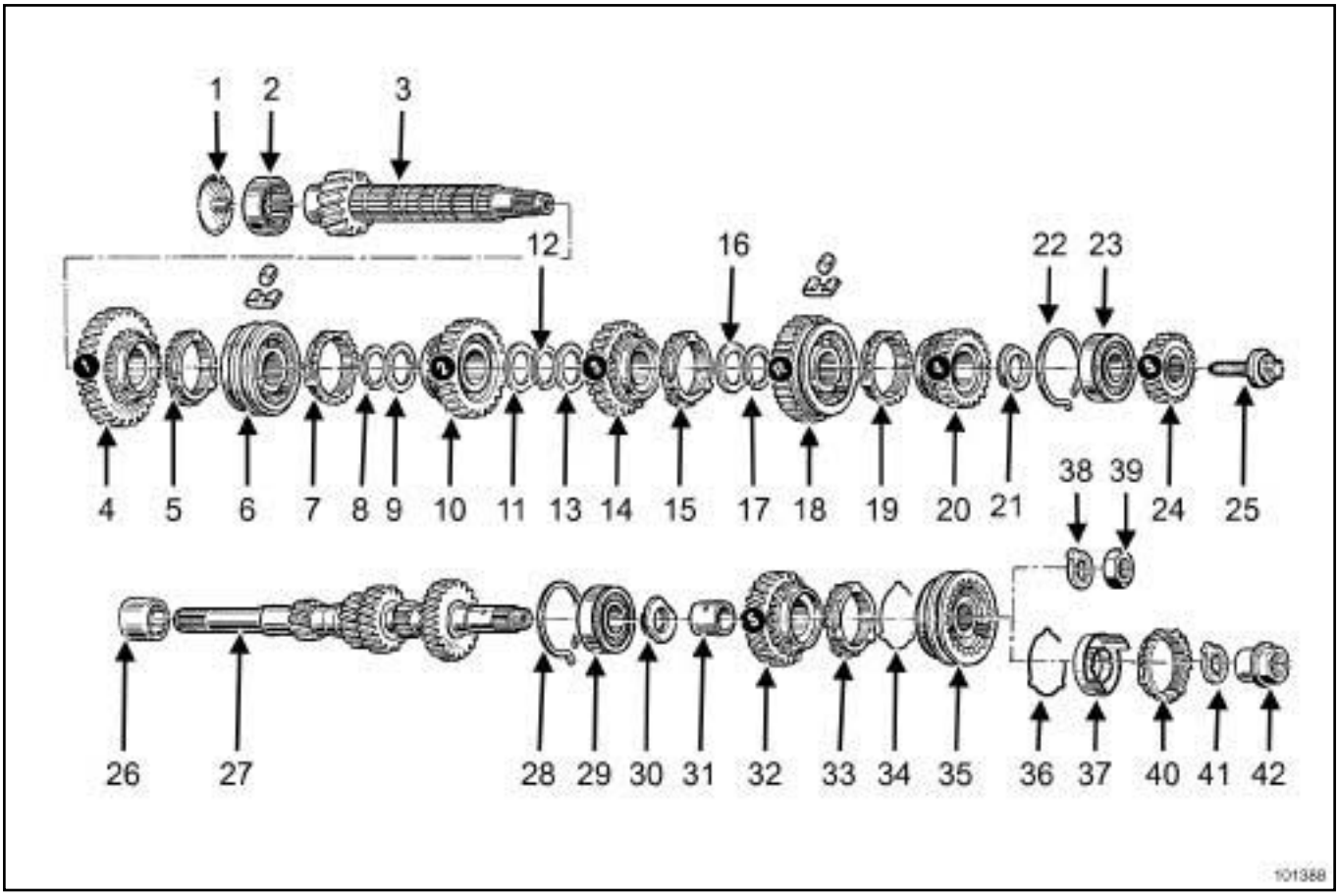
❏ Remove the filler cap (**3**) .

JB1 or JH3 or JR5



92081

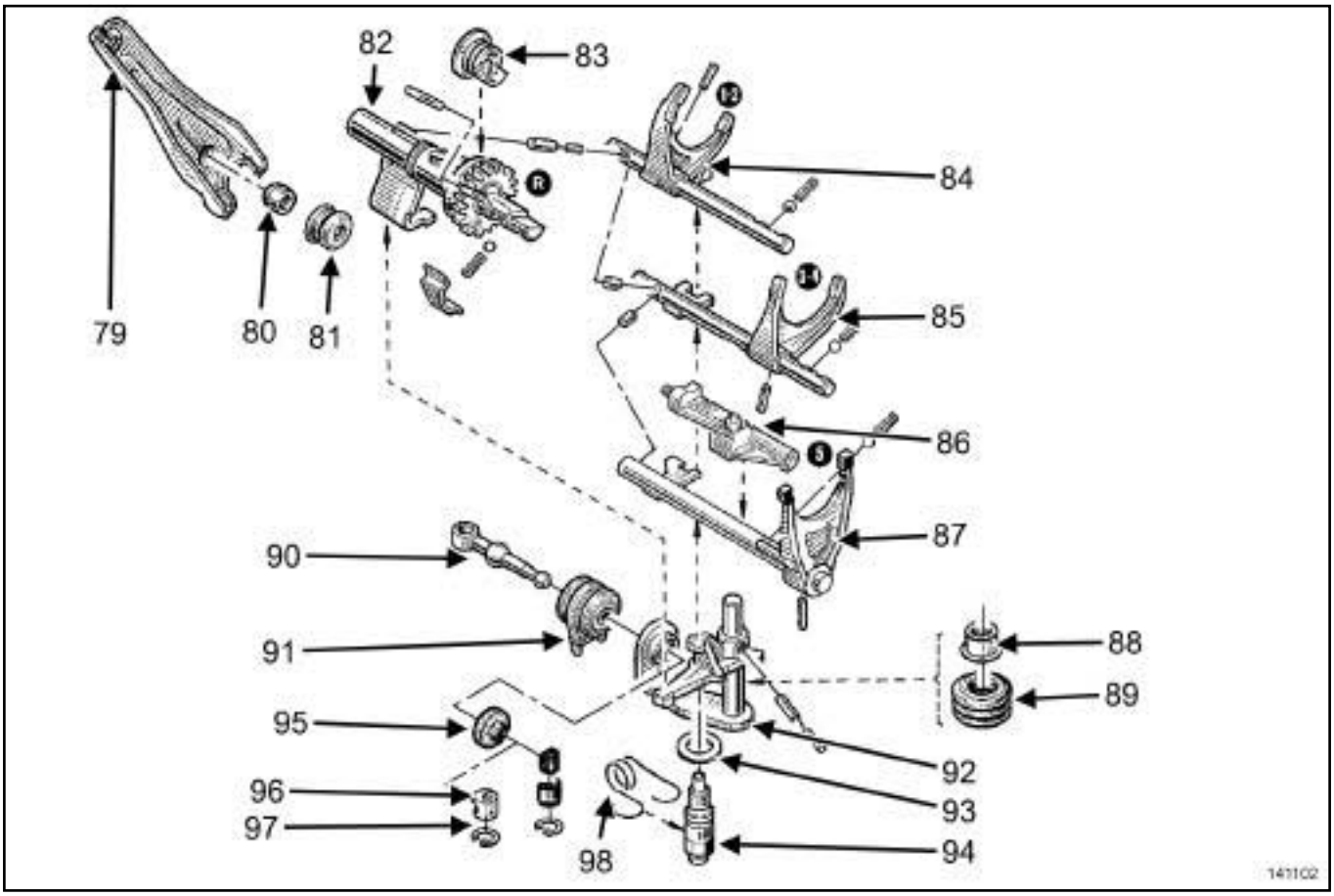
- ❏ Fill with the recommended oil to the level (**4**) of the opening (see **21A**, **Manual gearbox**, **Manual gearbox oil: Specifications**, page **21A-1**) (Technical Note 6012A, 04A, Lubricants).
- ❏ Refit the filler cap.
- ❏ Wipe any oil run-off with a cloth.
- ❏ Remove the **oil recovery tray**.
- ❏ Refit the engine undertray.



101388

(**1**) Oil deflector
(**2**) Output shaft bearing
(**3**) Output shaft
(**4**) First idle gear
(**5**) Synchroniser ring
(**6**) First-second synchroniser hub
(**7**) Synchroniser ring
(**8**) Lock ring
(**9**) Splined washer
(**10**) Second idle gear
(**11**) Splined washer
(**12**) Lock ring
(**13**) Splined washer
(**14**) Third idle gear
(**15**) Synchroniser ring
(**16**) Splined washer
(**17**) Lock ring
(**18**) Third-fourth synchroniser hub
(**19**) Synchroniser ring
(**20**) Fourth idle gear
(**21**) Lock washer
(**22**) Bearing retaining clips on mechanism housing
(**23**) Output shaft bearing
(**24**) Fifth fixed gear
(**25**) Output shaft bolt
(**26**) Input shaft bearing
(**27**) Primary shaft
(**28**) Bearing retaining clips on mechanism housing
(**29**) Input shaft bearing
(**30**) Lock washer
(**31**) Ring under fifth idle gear
(**32**) Fifth idle gear
(**33**) Synchroniser ring
(**34**) Synchroniser spring
(**35**) Fifth gear synchroniser hub
(**36**) Synchroniser spring
(**37**) Friction cone
(**38**) Retaining washer
(**39**) Input shaft nut

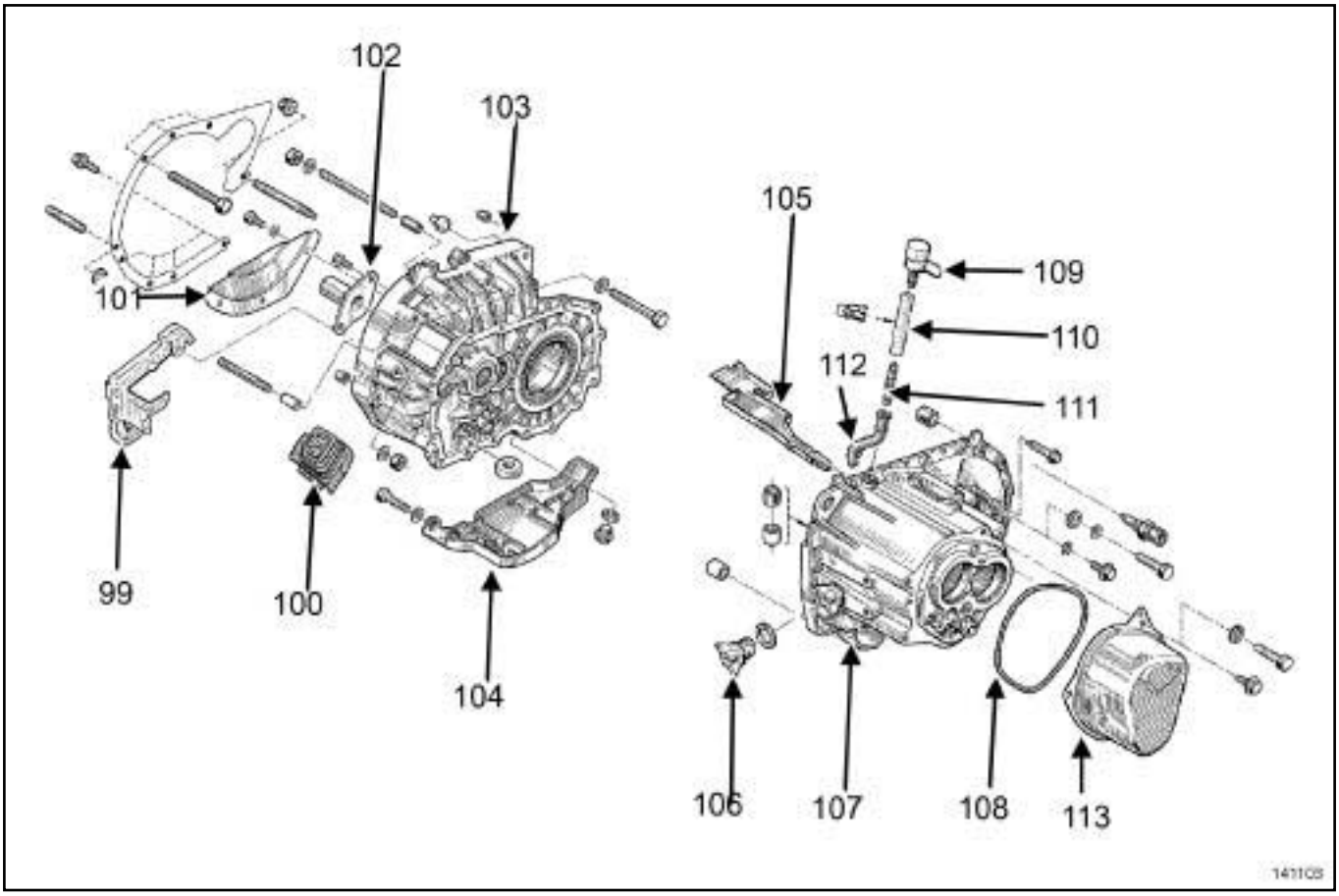
(**40**) Synchroniser ring
(**41**) Retaining washer
(**42**) Input shaft nut



141102

(**79**) Clutch control fork
(**80**) Fork pivot ball joint
(**81**) Pivot gaiter
(**82**) Assembled reverse gear shaft
(**83**) Bearing ring
(**84**) Assembled 1-2 fork shaft claw
(**85**) Assembled 3-4 fork shaft claw
(**86**) Reverse gear guide
(**87**) Assembled 5th gear fork shaft
(**88**) Lip seal
(**89**) Gaiter
(**90**) Tie-bar
(**91**) Gaiter
(**92**) Shaft lever and finger assembly
(**93**) Thickness washer
(**94**) 5th gear kickdown point
(**95**) Gaiter
(**96**) Ball joint bearing shell
(**97**) Lock ring
(**98**) Return spring

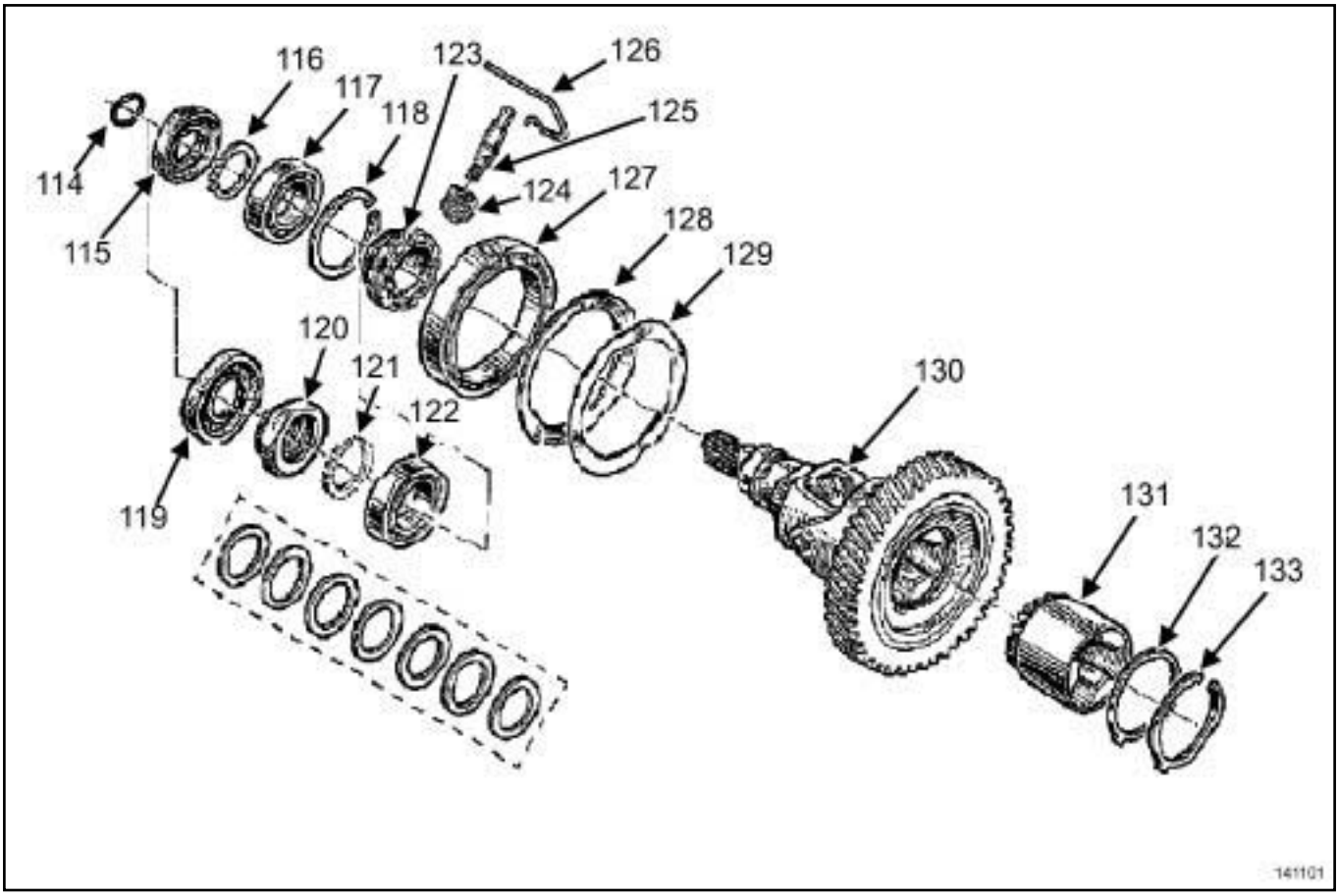
JB1



141103

(**99**)	Support bracket
(**100**)	Gaiter
(**101**)	Clutch protection component
(**102**)	Clutch guide tube
(**103**)	Clutch housing
(**104**)	Oil collector
(**105**)	Oil supply channel
(**106**)	Filler plug
(**107**)	Mechanism housing
(**108**)	5th gear cover seal
(**109**)	Breather vent body
(**110**)	Breather pipe
(**111**)	Union
(**112**)	Breather
(**113**)	5th gear cover

JB1

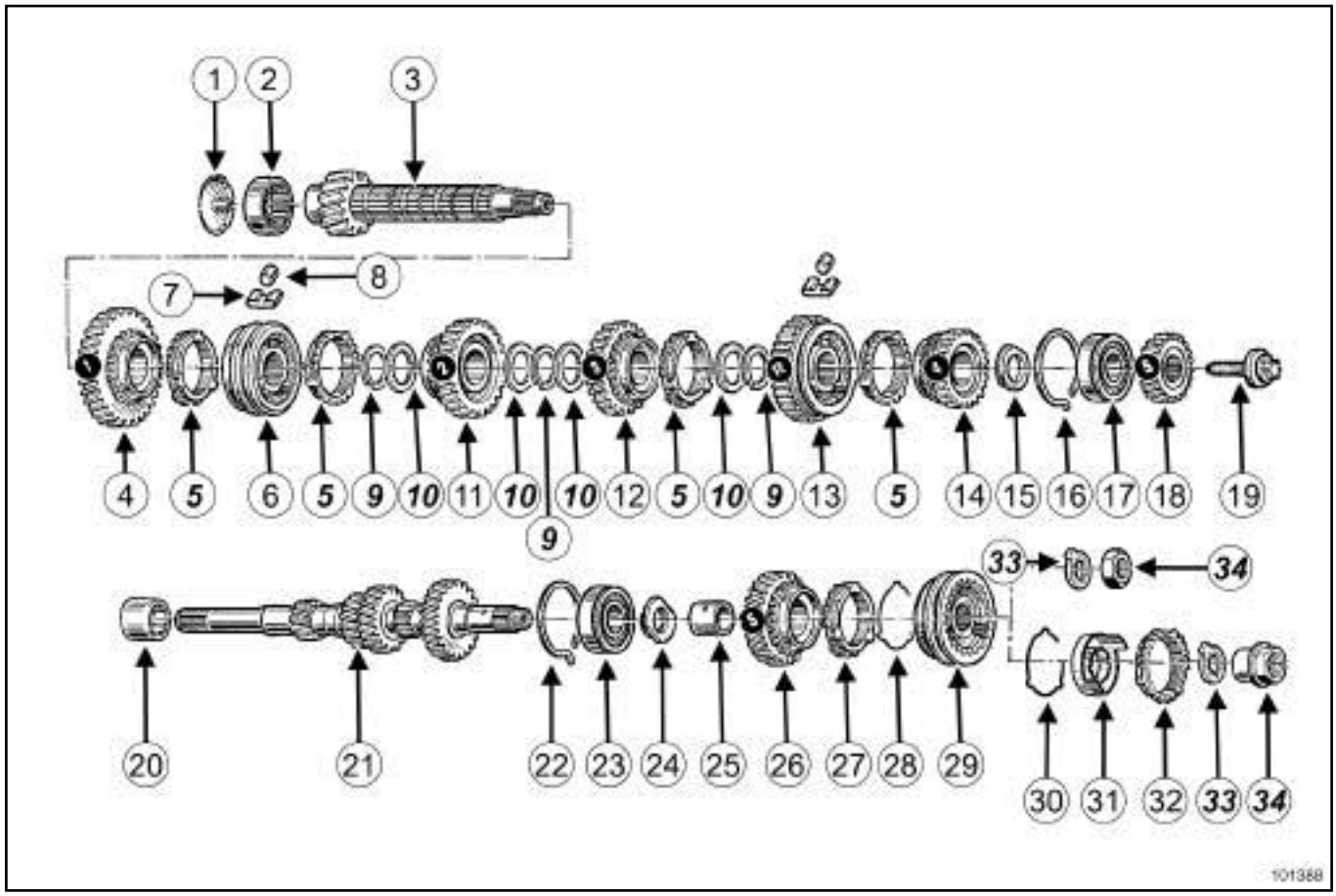


141101

(**114**) O-ring
(**115**) Lip seal
(**116**) Lock ring
(**117**) Ball bearing
(**118**) Lock ring
(**119**) Lip seal
(**120**) Differential line tightening nut
(**121**) Adjusting shim
(**122**) Roller bearing
(**123**) Tachometer control ring
(**124**) Tachometer control pinion
(**125**) Tachometer pinion shaft
(**126**) Locking pin
(**127**) Ball bearing
(**128**) Washer
(**129**) Spring washer
(**130**) Assembled differential mechanism
(**131**) Hollow sun wheel
(**132**) Thrust washer
(**133**) Stop washer

JH1 or JH3 or JR5

JH1 or JH3

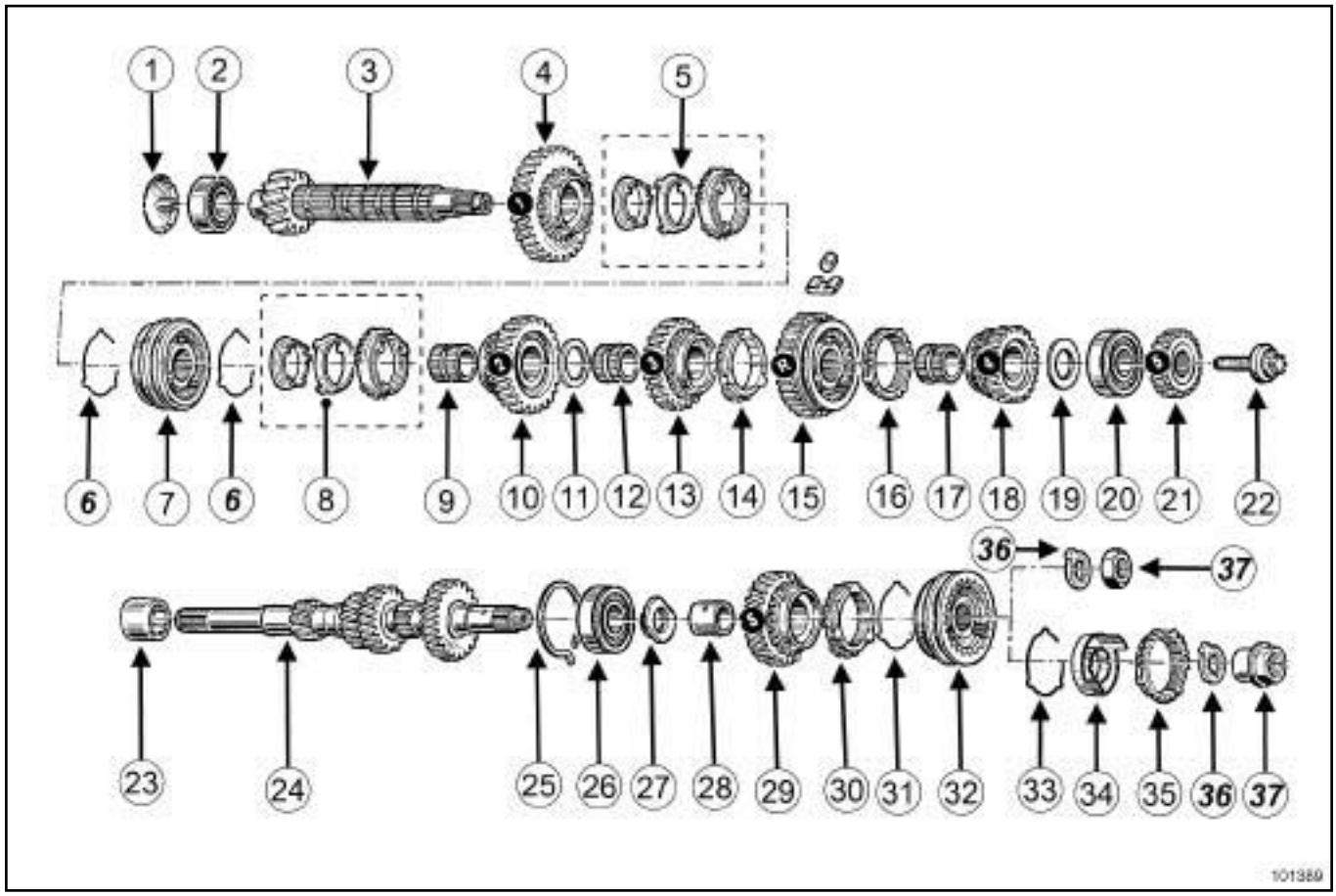


101388

(**1**) Oil deflector
(**2**) Bearing
(**3**) Output shaft
(**4**) First gear pinion
(**5**) Synchromesh ring
(**6**) First-second gear synchroniser hub
(**7**) Spring
(**8**) Roller
(**9**) Lock ring
(**10**) Splined washer
(**11**) Second gear pinion
(**12**) Third gear pinion
(**13**) Third-fourth gear synchroniser hub
(**14**) Fourth gear pinion
(**15**) Lock washer
(**16**) Retaining clips
(**17**) Bearing
(**18**) Fifth gear pinion
(**19**) Output shaft bolt
(**20**) Bearing guide
(**21**) Primary shaft
(**22**) Retaining clips
(**23**) Bearing
(**24**) Lock washer
(**25**) Sprocket supporting ring
(**26**) Fifth gear pinion
(**27**) Synchromesh ring
(**28**) Spring
(**29**) Synchroniser hub
(**30**) Spring
(**31**) Friction cone
(**32**) Synchromesh ring
(**33**) Washer
(**34**) Input shaft nut

JH1 or JH3 or JR5

JR5

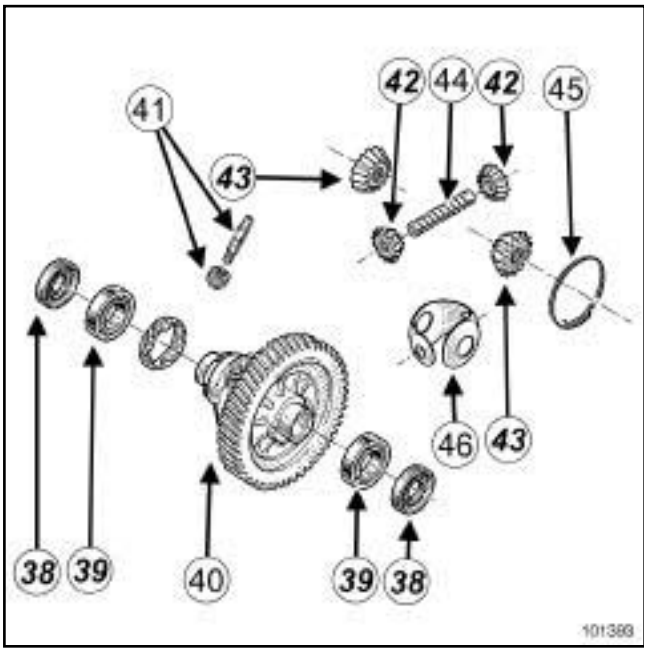


101389

(**1**) Oil deflector
(**2**) Bearing
(**3**) Output shaft
(**4**) First gear pinion
(**5**) Synchromesh ring
(**6**) Spring
(**7**) First-second gear synchroniser hub
(**8**) Synchromesh ring
(**9**) Sprocket supporting ring
(**10**) Second gear pinion
(**11**) Splined washer
(**12**) Sprocket supporting ring
(**13**) Third gear pinion
(**14**) Synchromesh ring
(**15**) Third-fourth gear synchroniser hub
(**16**) Synchromesh ring
(**17**) Sprocket supporting ring
(**18**) Fourth gear pinion
(**19**) Adjustment washer
(**20**) Bearing
(**21**) Fifth gear pinion
(**22**) Output shaft bolt
(**23**) Bearing guide
(**24**) Primary shaft
(**25**) Retaining clips
(**26**) Bearing
(**27**) Lock washer
(**28**) Sprocket supporting ring
(**29**) Fifth gear pinion
(**30**) Synchromesh ring
(**31**) Spring
(**32**) Synchroniser hub
(**33**) Spring
(**34**) Friction cone

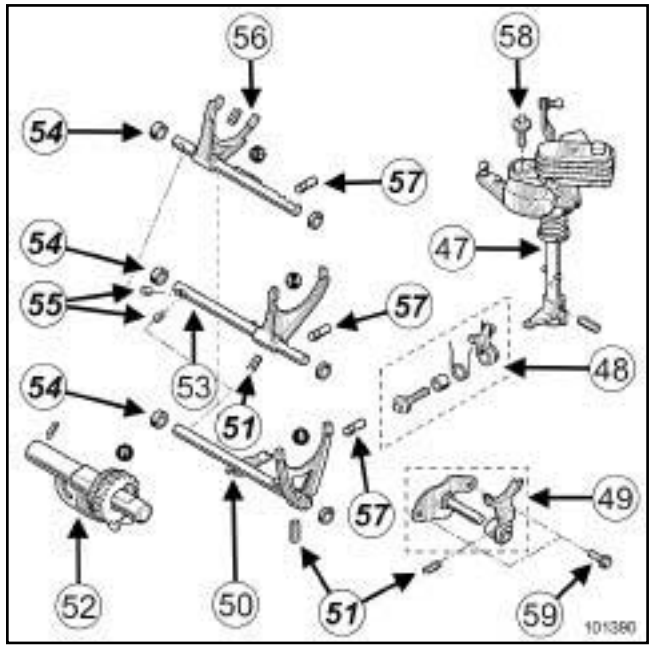
JH1 or JH3 or JR5

(**35**) Synchromesh ring
(**36**) Washer
(**37**) Input shaft nut



101393

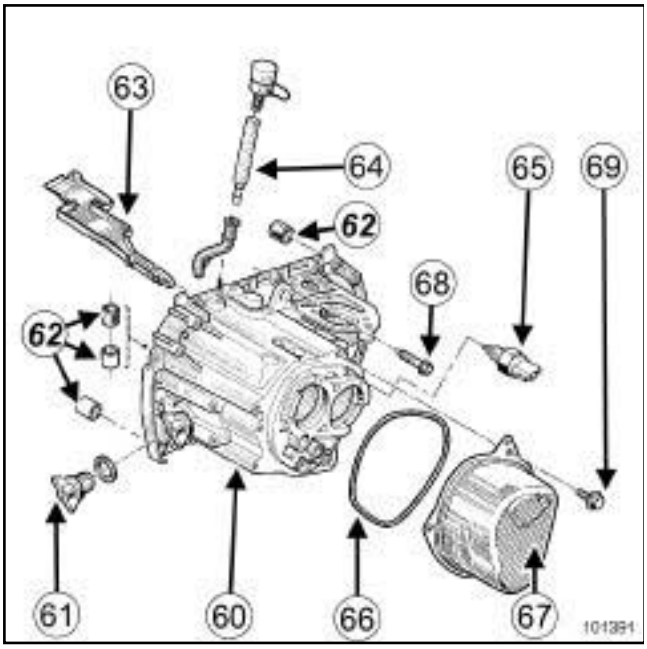
(**38**) Differential seal
(**39**) Bearing
(**40**) Differential
(**41**) Tachometer sprocket (if fitted to the vehicle)
(**42**) Satellite
(**43**) Sunwheel
(**44**) Axis
(**45**) Shaft retaining spring
(**46**) Friction cover



101390

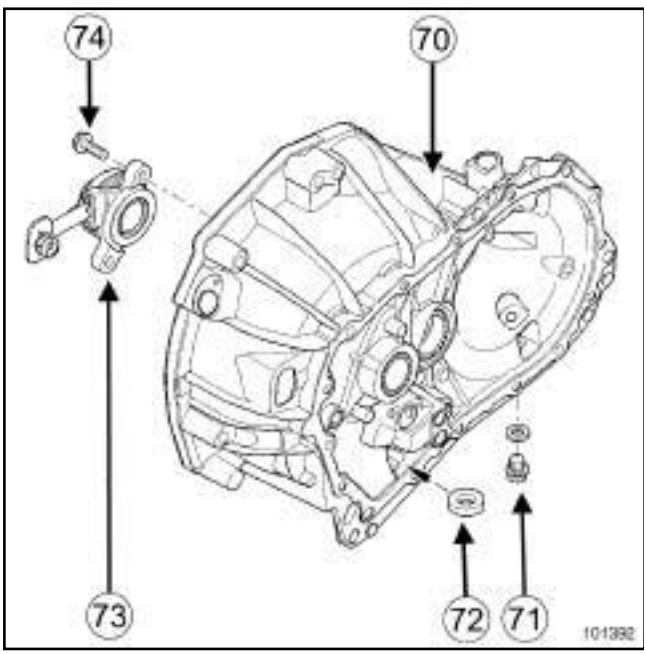
(**47**) Selector shaft
(**48**) Gear shift catch
(**49**) Reverse gear brake fork and shaft
(**50**) Fifth gear fork and shaft
(**51**) Pin
(**52**) Reverse gear shaft
(**53**) Third-fourth gear fork and shaft
(**54**) Ring
(**55**) Lock shaft
(**56**) First-second gear fork and shaft
(**57**) Retaining locating ball cartridge
(**58**) Selector shaft bolt
(**59**) Reverse gear fork shaft bolt

JH1 or JH3 or JR5



101391

(**60**) Mechanism housing
(**61**) Filler plug
(**62**) Spacer
(**63**) Oil channel
(**64**) Breather pipe
(**65**) Reverse gear sensor
(**66**) O-ring
(**67**) Fifth gear housing
(**68**) Gearbox bell housing bolt
(**69**) Fifth gear housing bolt



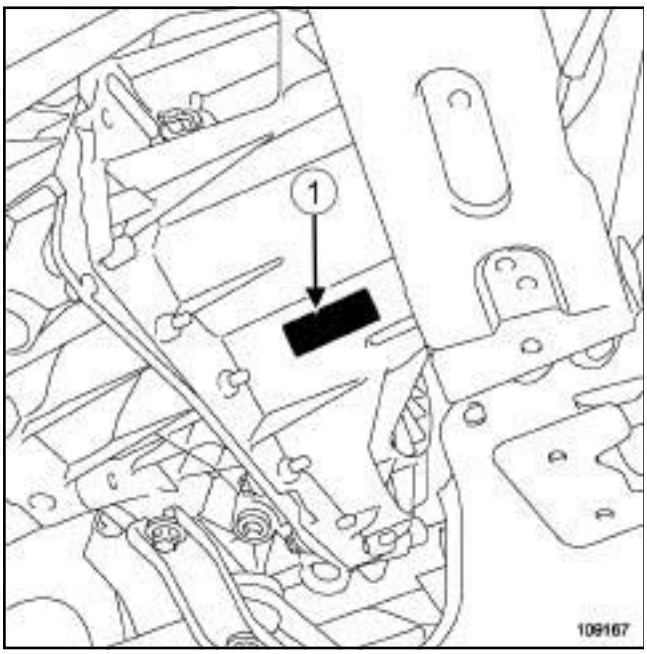
101392

(**70**) Clutch housing
(**71**) Drain plug
(**72**) Magnet
(**73**) Hydraulic clutch release bearing
(**74**) Hydraulic clutch release bearing bolt

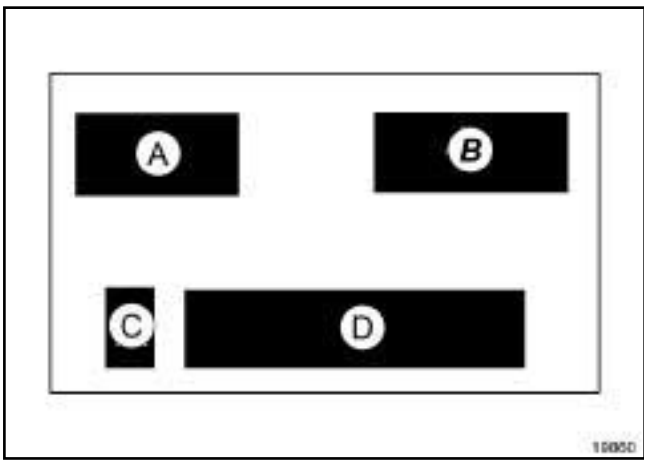
JH1 or JH3 or JR5

K4J / K4M / K9K / D4F engines are fitted with type JH and JR manual gearboxes.

A marking (**1**) on the gearbox casing indicates:



109167

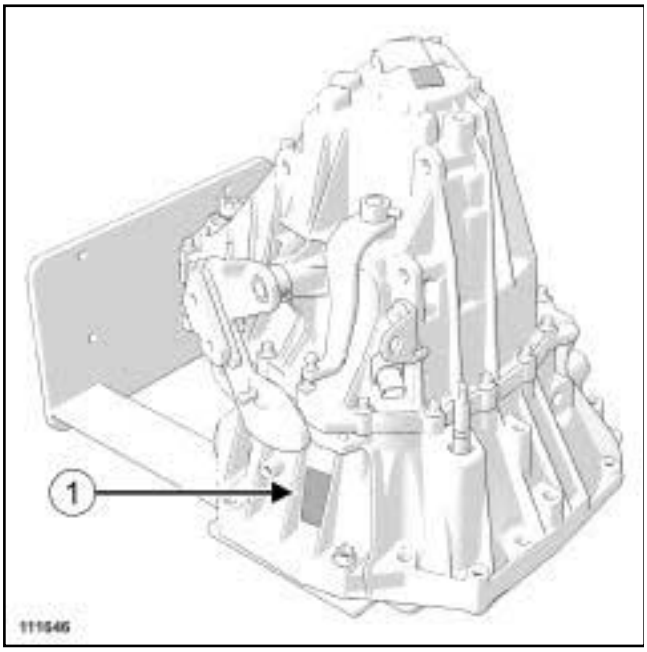


19860

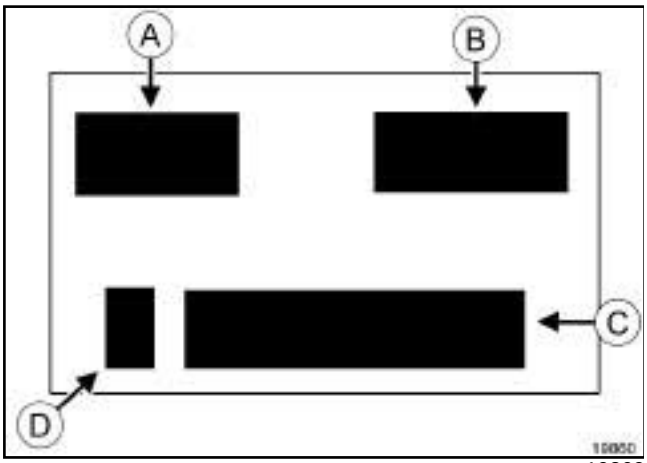
(**A**) Gearbox type
(**B**) Gearbox suffix
(**C**) Production plant
(**D**) Production number

JB1 or JH1 or JH3

A marking ***(1)*** on the gearbox casing indicates:



111646

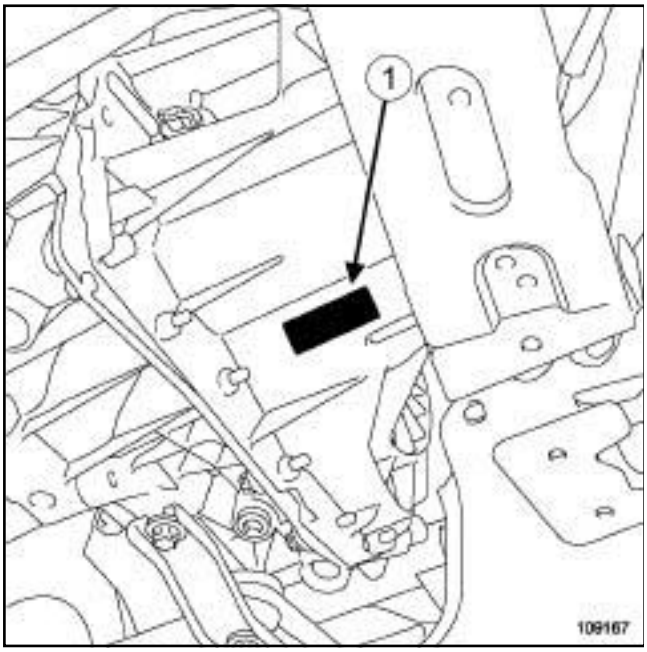


19860

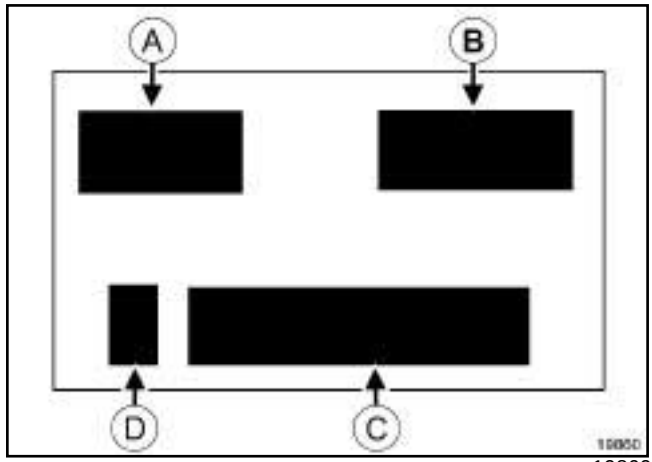
(**A**)	Gearbox type
(**B**)	Gearbox suffix
(**C**)	Production number
(**D**)	Production plant

JB1

I - IDENTIFICATION



109167



19860

A marking (**1**) on the gearbox casing indicates:

- (**A**) Gearbox type
- (**B**) Gearbox suffix
- (**C**) Fabrication number
- (**D**) Factory of manufacture

II - GEAR RATIOS

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JB0								
JB0-017	11/41	21/43	28/37	31/28	-	16/57	11/39	21/19
JB0-019	11/41	21/43	28/37	31/28	-	15/56	11/39	21/19
JB0-020	11/41	21/43	28/37	31/28	-	19/59	11/39	21/20
JB0-021	11/41	21/43	28/37	31/28	-	14/59	11/39	21/19
JB0-022	11/41	21/43	28/37	31/28	-	14/63	11/39	21/19
JB0-023	11/41	21/43	28/37	31/28	-	15/58	11/39	21/19
JB0-024	11/41	21/43	28/37	31/28	-	16/57	11/39	21/19
JB0-028	11/41	21/43	28/37	31/28	-	15/58	11/39	21/20
JB0-029	11/41	21/43	28/37	31/28	-	17/56	11/39	21/20
JB0-030	11/41	21/43	28/37	31/28	-	16/57	11/39	21/20
JB0-031	11/41	21/43	28/37	31/28	-	16/55	11/39	21/20
JB0-032	11/41	21/43	28/37	31/28	-	16/57	11/39	21/20
JB0-033	11/41	21/43	28/37	31/28	-	15/58	11/39	21/19
JB0-034	11/41	21/43	28/37	31/28	-	16/57	11/39	21/19

JB1

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JB0-035	11/41	21/43	28/37	31/28	-	15/61	11/39	21/19
JB0-036	11/41	21/43	28/37	31/28	-	15/61	11/39	21/20
JB0-040	11/41	21/43	28/37	31/28	-	17/56	11/39	21/19
JB0-041	11/41	21/43	28/37	31/28	-	17/56	11/39	21/19
JB1								
JB1-510	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-511	11/41	21/43	28/37	30/29	39/31	14/63	11/39	21/19
JB1-513	11/37	22/41	28/37	34/35	39/32	14/59	11/39	-
JB1-514	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-515	11/41	21/43	28/39	34/35	39/32	14/63	11/39	-
JB1-517	11/37	22/41	28/37	30/29	39/32	15/58	11/39	-
JB1-518	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-519	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-520	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB1-521	11/37	22/41	28/37	30/29	42/31	14/63	11/39	-
JB1-523	11/37	22/41	28/37	30/29	42/31	14/63	11/39	-
JB1-524	11/41	21/43	28/39	34/35	39/31	16/57	11/39	-
JB1-525	11/41	21/43	28/39	34/35	39/31	16/57	11/39	-
JB1-926	11/41	21/43	28/37	30/29	39/31	14/59	11/39	21/19
JB1-939	11/41	21/43	28/37	30/29	39/31	15/61	11/39	21/19
JB1-940	11/37	22/41	28/37	30/29	41/31	15/56	11/39	21/20
JB1-941	11/37	22/41	28/37	30/29	39/32	15/58	11/39	21/20
JB1-956	11/41	21/43	28/37	30/29	39/31	14/69	11/39	21/19
JB1-962	11/41	21/43	28/37	30/29	41/31	15/56	11/39	-
JB1-967	11/37	22/41	28/37	34/35	39/31	16/55	11/39	21/19
JB1-968	11/37	22/41	28/37	34/35	39/31	16/57	11/39	21/19
JB1-969	11/41	21/43	28/39	34/35	39/31	16/55	11/39	21/19
JB1-970	11/41	21/43	28/39	34/35	37/33	15/58	11/39	21/18
JB1-974	11/41	21/43	28/39	34/35	37/33	16/57	11/39	21/19
JB1-977	11/41	21/43	28/39	34/35	39/32	16/55	11/39	21/19

JB1

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JB1-985	11/41	21/43	28/39	34/35	39/32	14/63	11/39	21/18
JB1-988	11/37	22/41	28/37	30/29	41/31	15/56	11/39	21/19
JB1-989	11/37	22/41	28/37	30/29	39/32	15/58	11/39	21/19
JB1-990	11/41	21/43	28/37	30/29	39/31	14/69	11/39	21/19
JB1-991	11/37	22/41	28/37	34/35	39/32	15/61	11/39	21/19
JB1-992	11/41	21/43	28/39	34/35	39/32	14/69	11/39	21/18
JB1-994	11/41	21/43	28/39	34/35	39/32	14/59	11/39	21/19
JB1-996	11/37	22/41	28/37	34/35	39/32	15/61	11/39	21/19
JB1-997	11/37	22/41	28/37	34/35	39/32	14/59	11/39	21/19
JB1-999	11/41	21/43	28/39	34/35	39/31	14/69	11/39	21/19
JB3								
JB3-905	11/37	22/41	28/37	30/29	41/31	16/55	11/39	21/19
JB3-938	11/37	22/41	28/37	30/29	42/31	15/58	11/39	-
JB3-949	11/41	21/43	28/39	34/35	39/32	14/59	11/39	-
JB3-952	11/41	21/43	28/39	34/35	39/32	15/58	11/39	-
JB3-953	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-954	11/41	21/43	28/37	30/29	39/31	15/61	11/39	-
JB3-955	11/41	21/43	28/39	34/35	39/32	14/59	11/39	-
JB3-956	11/37	22/41	28/37	34/35	39/32	14/59	11/39	-
JB3-957	11/41	21/43	28/39	34/35	39/32	14/59	11/39	22/18
JB3-958	11/37	22/41	28/37	34/35	39/32	15/61	11/39	21/19
JB3-960	11/41	21/43	28/39	34/35	39/32	14/59	11/39	21/19
JB3-961	11/41	21/43	28/39	34/35	39/32	15/61	11/39	21/18
JB3-967	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-969	11/37	22/41	28/37	30/29	42/31	16/57	11/39	21/19
JB3-970	11/37	22/41	28/37	30/29	41/31	14/59	11/39	21/19
JB3-971	11/41	21/43	28/37	30/29	39/31	14/59	11/39	21/19
JB3-972	11/37	22/41	28/37	30/29	42/31	16/57	11/39	-
JB3-973	11/37	22/41	28/37	34/35	39/31	15/61	11/39	-
JB3-974	11/37	22/41	28/37	30/29	41/31	15/58	11/39	21/19

JB1

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JB3-975	11/41	21/43	28/37	30/29	41/31	14/63	11/39	21/19
JB3-976	11/41	21/43	28/39	34/35	39/31	16/57	11/39	21/18
JB3-979	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-980	11/37	22/41	28/37	30/29	42/31	16/57	11/39	-
JB3-981	11/41	21/43	28/39	34/35	39/32	14/59	11/39	-
JB3-982	11/37	22/41	28/37	34/35	39/32	14/59	11/39	-
JB3-983	11/37	22/41	28/37	30/29	42/31	15/58	11/39	-
JB3-984	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-985	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JB3-986	11/37	22/41	28/37	30/29	41/31	16/55	11/39	-
JB3-987	11/41	21/43	28/37	30/29	41/31	14/63	11/39	21/18
JB3-988	11/37	22/41	28/37	30/29	42/31	16/57	11/39	21/18
JB3-989	11/41	21/43	28/39	34/35	39/32	14/59	11/39	21/18
JB3-990	11/41	21/43	28/37	30/29	41/31	14/63	11/39	-
JB3-991	11/37	22/41	28/37	34/35	39/32	14/59	11/39	-
JB3-992	11/37	22/41	28/37	30/29	42/31	16/57	11/39	-
JB3-995	11/41	21/43	28/37	30/29	41/31	14/59	11/39	-
JB5								
JB5-000	11/41	19/39	25/33	30/29	34/27	15/61	11/39	21/19
JB5-001	11/41	19/39	25/33	30/29	34/27	16/55	11/39	21/20
JB5-002	11/34	19/35	25/33	30/29	33/25	15/61	11/39	21/20
JB5-003	11/41	19/39	25/33	30/29	34/27	17/56	11/39	21/20
JB5-004	11/41	19/39	25/33	30/29	34/27	15/61	11/39	21/20
JB5-005	11/41	19/39	25/33	30/29	34/27	16/57	11/39	21/20
JB5-006	11/41	19/39	25/33	30/29	34/27	16/57	11/39	21/20
JB5-007	11/41	19/39	25/33	30/29	34/27	15/58	11/39	21/19
JB5-008	11/41	19/39	25/33	30/29	34/27	15/58	11/39	21/20
JB5-009	11/41	19/39	25/33	30/29	34/27	15/61	11/39	21/19
JB5-010	11/41	19/39	25/33	30/29	34/27	15/57	11/39	21/20
JB5-015	11/41	19/39	25/33	30/29	34/27	14/59	11/39	21/20

JB1

Suffix	1st	2nd	3rd	4th	5th	Final drive	Reverse gear	Tachometer
JC5								
JC5-062	11/37	22/41	28/37	34/35	39/31	15/61	11/39	21/18
JC5-070	11/41	21/43	28/37	35/34	39/31	15/61	11/39	22/18
JC5-089	11/34	22/41	28/37	34/35	39/31	15/58	11/39	21/19
JC5-090	11/37	22/41	28/37	34/35	39/32	15/58	11/39	-
JC5-100	11/41	21/43	28/39	31/34	39/32	15/58	11/39	-
JC5-103	11/41	21/43	28/37	35/34	42/31	15/56	11/39	22/18
JC5-106	11/41	21/43	28/39	31/34	37/33	16/57	11/39	-
JC5-107	11/41	21/43	28/37	35/34	42/31	17/56	11/39	-
JC5-108	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JC5-109	11/41	21/43	28/37	35/34	42/31	15/56	11/39	-
JC5-119	11/41	21/43	28/37	35/34	39/31	15/61	11/39	-
JC5-120	11/41	21/43	28/37	35/34	42/31	15/58	11/39	-
JC5-125	11/37	22/41	28/37	35/34	41/31	15/58	11/39	21/19
JC5-126	11/41	21/43	28/37	35/34	41/31	16/57	11/39	21/19
JC5-128	11/41	21/43	28/37	35/34	41/31	17/56	11/39	21/19
JC5-129	11/34	22/41	28/37	34/35	39/31	15/61	11/39	21/19
JC5-130	11/34	22/41	28/37	34/35	39/31	15/61	11/39	-
JC5-131	11/37	22/41	28/37	34/35	39/32	15/58	11/39	-
JC5-132	11/41	21/43	28/37	35/34	41/31	16/57	11/39	-
JC5-137	11/37	22/41	28/37	34/35	39/32	15/61	11/39	-
JC5-138	11/41	`21/43	28/37	35/34	42/31	17/56	11/39	-
JC5-140	11/41	21/43	28/37	35/34	41/31	17/56	11/39	-
JC5-144	11/41	21/43	28/37	35/34	41/31	17/56	11/39	21/19

Manual gearbox: Specifications

JH1 or JH3 or JR5

GEAR RATIOS

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JA3 sequential gearbox								
JA3-001	11/41	21/43	28/39	34/35	39/32	11/39	14/61	None
JA5 sequential gearbox								
JA5-001	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None
JH1 manual gearbox								
JH1 -004	11/37	22/41	28/37	34/35	39/32	11/39	14/59	21/19
JH1 -013	11/37	22/41	28/37	34/35	39/32	11/39	15/61	21/19
JH1 -014	11/37	22/41	28/37	30/29	39/32	11/39	15/58	21/19
JH1 -015	11/37	22/41	28/37	30/29	41/31	11/39	15/56	21/19
JH1 -016	11/37	22/41	28/37	34/35	39/32	11/39	14/59	None
JH1 -017	11/37	22/41	28/37	34/35	39/32	11/39	15/61	None
JH1-019	11/37	22/41	28/37	34/35	39/32	14/59	14/59	21/19
JH1 -018	11/37	22/41	28/37	30/29	41/31	11/39	15/56	21/19
JH1 -020	11/41	21/43	28/39	34/35	39/31	11/39	14/59	None
JH1-021	11/41	21/43	28/39	34/35	39/31	11/39	14/59	None
JH1 -053	11/41	21/43	28/39	34/35	39/31	11/39	14/59	22/18
JH1-054	11/41	21/43	28/39	34/35	39/31	11/39	15/56	21/19
JH1-055	11/37	21/41	28/37	34/35	39/31	11/39	16/55	21/19
JH3 manual gearbox								
JH3-050	11/41	21/43	28/39	34/35	39/31	11/39	15/56	21/19
JH3-052	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-053	11/37	22/41	28/37	30/29	42/41	11/39	15/58	22/18
JH3-054	11/41	21/43	28/37	30/29	41/31	11/39	14/63	22/18
JH3-055	11/41	21/43	28/37	30/29	39/31	11/39	14/63	22/18
JH3-056	11/41	21/43	28/37	30/29	41/31	11/39	14/61	22/18
JH3-057	11/41	21/43	28/39	34/35	39/31	11/39	14/59	None
JH3-058	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-059	11/45	22/47	28/39	34/35	37/33	11/39	14/69	22/18

JH1 or JH3 or JR5

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JH3-060	11/41	21/43	28/39	34/35	39/31	11/39	14/59	22/18
JH3-061	11/41	21/43	28/39	34/35	39/31	11/39	14/61	22/18
JH3-062	11/41	21/43	28/39	34/35	39/31	11/39	14/61	22/18
JH3-063	11/41	21/43	28/39	34/35	39/32	11/39	14/61	22/18
JH3-064	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-065	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-066	11/41	21/43	28/29	34/35	39/31	11/39	14/63	22/18
JH3-067	11/37	22/41	28/37	34/35	39/32	11/39	14/63	22/18
JH3-068	11/41	21/43	28/39	34/35	39/32	11/39	14/59	22/18
JH3-071	11/41	21/43	28/37	30/29	39/31	11/39	14/63	22/18
JH3-072	11/41	21/43	28/37	34/35	39/32	11/39	14/59	22/18
JH3-105	11/41	21/43	28/39	31/34	37/33	11/39	14/59	None
JH3-106	11/41	21/43	28/39	34/35	39/32	11/39	14/63	None
JH3-128	11/41	21/43	28/39	34/35	39/32	11/39	14/61	None
JH3-129	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-131	11/41	21/43	28/39	31/34	37/33	11/39	15/58	None
JH3-132	11/37	22/41	28/37	30/29	42/41	11/39	15/58	None
JH3-137	11/41	21/43	28/39	31/34	37/33	11/39	14/59	None
JH3-141	11/37	22/41	28/37	30/29	42/41	11/39	15/58	None
JH3-142	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-143	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-144	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-145	11/37	22/41	28/37	30/29	42/31	11/39	16/57	None
JH3-150	11/37	22/41	28/37	30/29	42/41	11/39	15/58	None
JH3-154	11/41	21/43	28/39	31/34	37/33	11/39	16/61	None
JH3-155	11/41	21/43	28/39	31/34	37/33	11/39	15/58	None
JH3-156								
JH3-160	11/41	22/41	28/37	30/29	42/31	11/39	15/58	22/18
JH3-166	11/41	21/43	28/37	30/29	42/31	11/39	16/55	None
JH3-169	11/41	21/43	28/39	34/35	39/31	11/39	14/59	None

JH1 or JH3 or JR5

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JH3-170	11/41	21/43	28/39	34/35	39/32	11/39	14/63	None
JH3-171	11/37	22/41	28/37	34/35	39/31	11/39	15/61	None
JH3-172	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-173	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-174	11/37	22/41	28/37	30/29	42/31	11/39	15/68	None
JH3-175	11/37	22/41	28/37	30/29	42/31	11/39	15/68	None
JH3-176	11/41	21/43	28/39	34/35	39/32	11/39	14/61	None
JH3-177	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None
JH3-179	11/41	21/43	28/39	31/34	37/33	11/39	15/68	None
JH3-183	11/41	21/43	28/39	34/35	39/32	11/39	14/59	None
JH3-184	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-185	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-186	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-187	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-189	11/37	22/41	28/37	30/29	42/31	11/39	15/56	None
JH3-190	11/37	22/41	28/37	30/29	42/31	11/39	15/56	None
JH3-193	11/41	21/43	28/37	30/29	42/31	11/39	16/55	None
JH3-199	11/41	21/43	28/39	34/35	39/32	11/39	14/59	None
JH3-309	11/41	21/43	28/39	34/35	39/32	11/39	15/58	None
JH3-312	11/41	21/43	28/37	30/29	42/31	11/39	16/57	None
JH3-313	11/41	21/43	28/37	30/29	42/31	11/39	16/57	None
JH3-315	11/41	21/43	28/37	30/29	42/31	11/39	16/57	None
JH3-321	11/41	21/43	28/39	34/35	39/31	11/39	14/59	22/18
JR5 manual gearbox								
JR5-003	11/37	22/41	28/37	34/35	39/32	11/39	15/61	None
JR5-004	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None
JR5-008	11/41	21/43	29/39	31/34	37/33	11/39	15/58	None
JR5-015	11/41	21/43	28/39	31/34	37/33	11/39	15/58	None
JR5-016	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None
JR5-017	11/41	21/43	28/39	31/34	37/33	11/39	15/61	None

Manual gearbox: Specifications

JH1 or JH3 or JR5

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JR5-018	11/37	22/41	28/37	34/35	39/32	11/39	15/61	None
JR5-113	11/41	21/43	28/37	35/34	41/31	11/39	16/57	None
JR5-116	11/41	21/43	28/37	35/34	41/31	11/39	16/55	21/19
JR5-124	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None
JR5-126	11/37	21/41	28/37	35/34	42/31	11/39	15/58	21/19
JR5-144	11/37	21/41	28/37	35/34	42/31	11/39	15/58	21/18
JR5-145	11/41	21/43	28/37	35/34	41/31	11/39	16/55	21/19
JR5-147	11/41	21/43	28/37	35/34	42/31	11/39	15/58	22/18
JR5-149	11/41	21/43	28/39	31/34	42/31	11/39	15/58	22/18
JR5-151	11/41	21/43	28/37	35/34	39/31	11/39	14/63	22/18
JR5-152	11/41	21/43	28/37	35/34	39/32	11/39	14/63	None
JR5-156	11/41	21/43	28/37	35/34	39/32	11/39	15/58	None
JR5-158	11/41	21/43	28/37	35/34	42/31	11/39	15/61	22/18
JR5-165	11/41	21/43	28/37	35/34	42/31	11/39	14/69	22/18
JR5-166	11/41	21/43	28/37	35/34	42/31	11/39	16/57	22/18
JR5-168	11/41	21/43	28/37	35/34	41/31	11/39	14/69	None
JR5-169	11/41	21/43	28/37	35/34	42/31	11/39	14/73	22/18
JR5-170	11/41	21/43	28/37	35/34	42/31	11/39	14/69	22/18
JR5-171	11/41	21/43	28/37	35/34	39/32	11/39	14/63	None
JR5-172	11/41	21/43	28/39	31/34	37/33	11/39	14/63	22/18
JR5-173	11/41	21/43	28/37	35/34	39/32	11/39	14/61	None
JR5-175	11/41	21/43	28/37	34/35	39/32	11/39	15/56	None
JR5-176	11/41	22/41	28/37	35/34	42/31	11/39	15/56	None
JR5-183	11/41	21/43	28/37	35/34	39/32	11/39	14/59	None
JR5-184	11/41	21/43	28/37	35/34	39/32	11/39	15/58	None
JR5-185	11/41	21/43	28/37	35/34	41/31	11/39	17/56	None
JR5-187	11/41	21/43	28/37	35/34	39/32	11/39	14/69	None
JR5-189	11/41	21/43	28/37	35/34	41/31	11/39	14/59	None
JR5-193	11/41	21/43	28/37	35/34	41/31	11/39	1756	None
JR5-301	11/41	21/43	28/37	35/34	41/31	11/39	15/56	None

JH1 or JH3 or JR5

Suffix	First	Second	Third	Fourth	Fifth	Reverse gear	Final drive	Tacho meter
JR5-302	11/41	21/43	28/37	35/34	41/31	11/39	14/69	None
JR5-308	11/41	21/43	28/37	31/29	45/31	11/39	18/57	None

K9K, and JH3 or JR5

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

Equipment required
component jack

Tightening torques ▽	
lower gearbox bolts	**44 N.m**
gearbox nuts and bolts	**44 N.m**
gearbox upper bolts	**44 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

❏ Remove:

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

❏ Disconnect the engine management computer connectors.

❏ Remove:

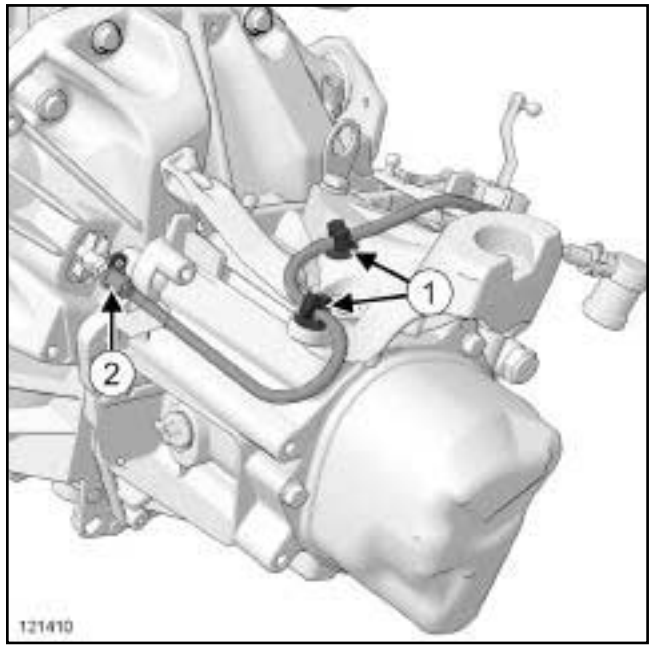
- the engine management computer mounting bolts,
- the engine management computer mounting nuts.

❏ Remove the engine management computer mounting.

❏ Remove the engine management computer wiring harness nut from the engine management computer mounting.

❏ Remove the engine management computer wiring harness.

❏ Remove the engine management computer mounting fitted with the engine management computer.



121410

❏ Unclip:

- the clutch hydraulic control pipe on the gearbox (**1**) ,
- the union (**2**) on the hydraulic tappet slave cylinder,
- the gearbox breather.

❏ Remove:

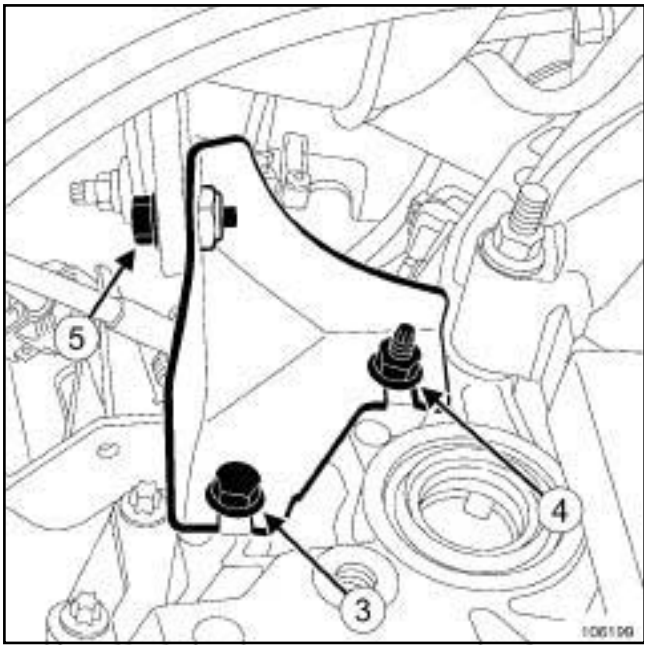
- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection).

❏ Drain the gearbox oil (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❏ Remove:

- the hub carrier - front left-hand and front right-hand driveshaft assemblies (see) (31A, Front axle components),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting).

K9K, and JH3 or JR5



106199

❏ Loosen the bolt (**3**) and the nut (**4**) on the upstream strut of the catalytic converter on the gearbox.

❏ Remove:

- the bolt (**5**) from the upstream strut of the catalytic converter on the catalytic converter,
- the upstream strut of the catalytic converter by sliding it upwards,
- the starter (see **Starter: Removal - Refitting**) (16A, Starting - Charging).


121415

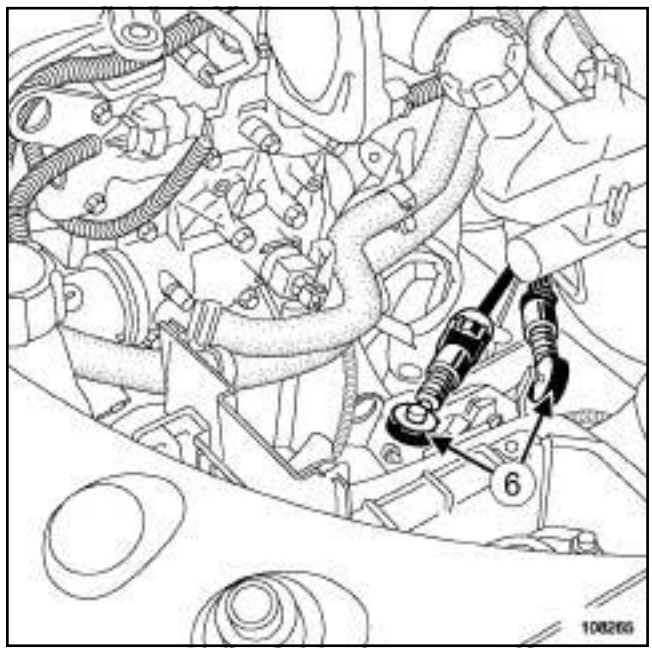
❏ Fit the **(Mot. 1453)** :

- positioning it on the front wing opening stops and on the headlight brackets,
- using the two engine lifting eyes to avoid the « engine - gearbox » assembly tilting too much,
- making sure the tool is strapped to the vehicle.

❏ Remove:

- the left-hand suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting),
- the subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components).

II - OPERATION FOR REMOVAL OF PART CONCERNED



108265

❏ Detach the gearbox controls by pressing on the cable end pieces (**6**) .

❏ Remove the earth strap bolt.

❏ Remove the upper gearbox bell housing bolts.

❏ Disconnect:

- the speed and position sensor connector,
- the reverse gear switch connector.

❏ Remove:

- the lower gearbox bell housing bolts,
- the gearbox nuts,
- the gearbox studs.

❏ Fit a **component jack** under the gearbox.

❏ Remove:

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

K9K, and JH3 or JR5

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the gearbox using a **component jack**,
- the gearbox stud nuts,
- the gearbox lower bolts.

❏ Torque tighten:

- the **lower gearbox bolts (44 N.m)**,
- the **gearbox nuts and bolts (44 N.m)**.

❏ Refit the upper gearbox bolts.

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

❏ Refit the earth strap bolt on the gearbox.

❏ Connect:

- the reverse gear switch connector,
- the speed and position sensor connector.

❏ Clip the gearbox controls into place.

II - FINAL OPERATION

❏ Refit:

- the subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
- the left-hand suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (19D, Engine mounting).

❏ Remove the tool **(Mot. 1453)**.

❏ Refit:

- the upstream strut of the catalytic converter by sliding it upwards,
- the catalytic converter upstream strut bolt on the catalytic converter.

❏ Tighten the bolt and nut on the upstream strut of the catalytic converter on the gearbox.

❏ Refit:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the hub carrier - front left-hand and front right-hand driveshaft assemblies (see) (31A, Front axle components),
- the starter (see **Starter: Removal - Refitting**) (16A, Starting - Charging),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (55A, Exterior protection),
- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Clip:

- the union onto the hydraulic tappet slave cylinder,
- the hydraulic clutch control pipe,
- the gearbox breather.

❏ Bleed the clutch (see **Clutch circuit: Bleed**) (37A, Mechanical component controls).

❏ Refit the engine management computer mounting fitted with the engine management computer.

❏ Fit the engine management computer wiring harness.

❏ Refit the engine management computer wiring harness nut on the engine management computer mounting.

❏ Fit the engine management computer mounting.

❏ Refit:

- the engine management computer mounting bolts,
- the engine management computer mounting nuts.

❏ Connect the engine management computer connectors.

❏ Refit:

- 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),

❏ Fill up the gearbox oil (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❏ Refit:

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

D4F, and JB1 – D7F, and JB1

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

Equipment required
component jack

Tightening torques ▽	
gearbox mountings	**44 Nm**

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Remove:

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery).

D4F

❏ Remove the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).

❏ Remove:

- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment).

❏ Disconnect the engine management computer connectors.

❏ Remove:

- the engine management computer mounting bolts,
- the engine management computer mounting nuts.

❏ Remove the engine management computer mounting.

❏ Remove the engine management computer wiring harness nut from the engine management computer mounting.

❏ Remove the engine management computer wiring harness.

❏ Remove the engine management computer mounting fitted with the engine management computer.

❏ Unclip:

- the clutch cable,
- the gearbox breather.

❏ Remove:

- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection).

❏ Drain the gearbox oil (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❏ Remove:

- the hub carrier - front left-hand and front right-hand driveshaft assemblies (see) (MR 411, 31A, Front axle components),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the starter (see **Starter: Removal - Refitting**) (MR 411, 16A, Starting - Charging).

121415

❑ Fit the **(Mot. 1453)** :

- positioning it on the front wing opening stops and on the headlight brackets,
- using the two engine lifting eyes to avoid the « engine - gearbox » assembly tilting too much,
- making sure the tool is strapped to the vehicle.

❑ Remove:

- the left-hand suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the subframe (see **Front axle subframe: Removal - Refitting**) (MR 411, 31A, Front axle component).

II - OPERATION FOR REMOVAL OF PART CONCERNED

❑ Disconnect the reverse gear switch connector.

❑ Remove:

- the earth strap bolt on the gearbox,
- the gearbox upper bolts,
- the engine speed and position sensor (see **Crankshaft position sensor: Removal - Refitting**) (MR 411, 17B, Petrol injection).
- the gearbox lower bolts,
- the flywheel protection plate bolts,
- the flywheel protection plate,
- the gearbox stud nuts,
- the gearbox using a **component jack**.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the gearbox using a **component jack**.
- the gearbox mountings.

❑ Torque tighten the **gearbox mountings (44 Nm)**.

❑ Refit:

- the engine speed and position sensor (see **Crankshaft position sensor: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the earth strap bolt on the gearbox.

❑ Connect the reverse gear switch connector.

II - FINAL OPERATION.

❑ Refit:

- the subframe (see **Front axle subframe: Removal - Refitting**) (MR 411, 31A, Front axle components),
- the left-hand suspended engine mounting (see **Left-hand suspended engine mounting: Removal - Refitting**) (MR 411, 19D, Engine mounting).

❑ Remove the **(Mot. 1453)**.

❑ Refit:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the hub carrier - front left-hand and front right-hand driveshaft assemblies (see) (MR 411, 31A, Front axle components),
- the starter (see **Starter: Removal - Refitting**) (MR 411, 16A, Starting - Charging),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres).

❑ Clip:

- the clutch cable,
- the gearbox breather.

D4F, and JB1 – D7F, and JB1

❏ Refit the engine management computer mounting fitted with the engine management computer.

❏ Fit the engine management computer wiring harness.

❏ Refit the engine management computer wiring harness nut on the engine management computer mounting.

❏ Fit the engine management computer mounting.

❏ Refit:

- the engine management computer mounting bolts,
- the engine management computer mounting nuts.

❏ Connect the engine management computer connectors.

❏ Refit:

- the scoop under the scuttle panel grille (see **Scoop under the scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment),
- the scuttle panel grille (see **Scuttle panel grille: Removal - Refitting**) (MR 412, 56A, Exterior equipment).

D4F

❏ Refit the air filter box (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture).

❏ Fill up the gearbox oil (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❏ Refit:

- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

K4M, and JR5

Equipment required
workshop hoist

Tightening torques ▽	
manual gearbox nuts and bolts	**44 N.m**
earth strap bolt on the gearbox	**44 N.m**
support bolts for the suspended engine mounting on the gearbox	**62 N.m**

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,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- 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).

❏ Drain:

- the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) ,
- the engine cooling system (see **Cooling system: Draining - Refilling**) (19A, Cooling),
- the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❏ Remove:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
- the front left-hand driveshaft (see **29A**, **Driveshafts**, **Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) ,
- the front right-hand driveshaft (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) ,
- the differential output seals (see **21A**, **Manual gearbox**, **Differential output seal: Removal - Refitting**, page **21A-38**) (21A, Manual gearbox),
- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals).

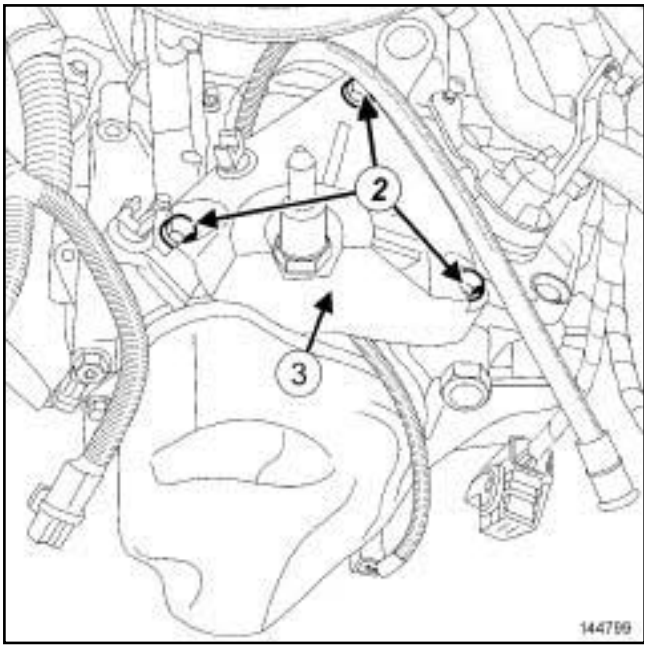
II - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Remove the “engine - gearbox” assembly from theusing a **workshop hoist**.

132319

❏ Disconnect the TDC sensor connector (**1**) .

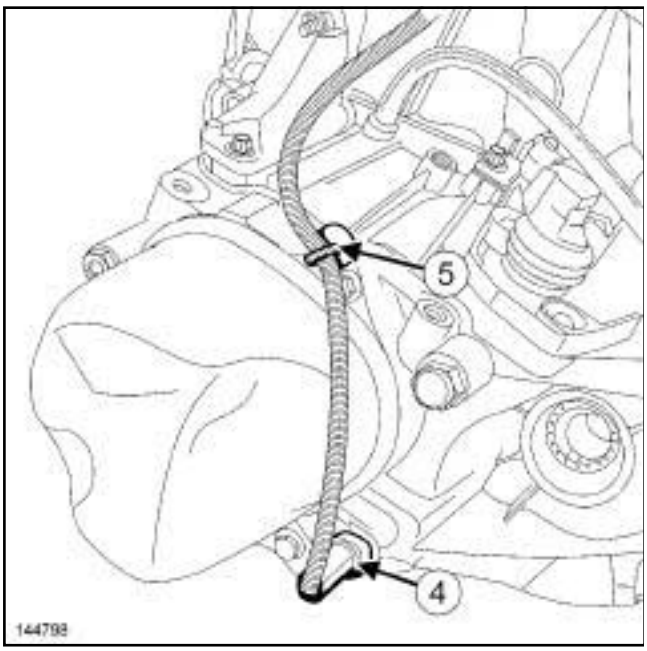
K4M, and JR5



144799

❏ Remove:

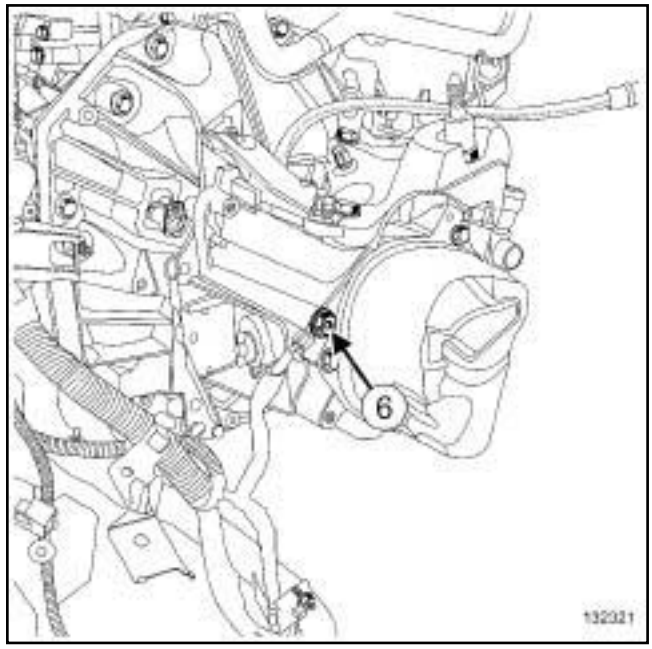
- the suspended engine mounting support bolts (**2**) on the gearbox,
- the suspended engine mounting support (**3**) on the gearbox.



144798

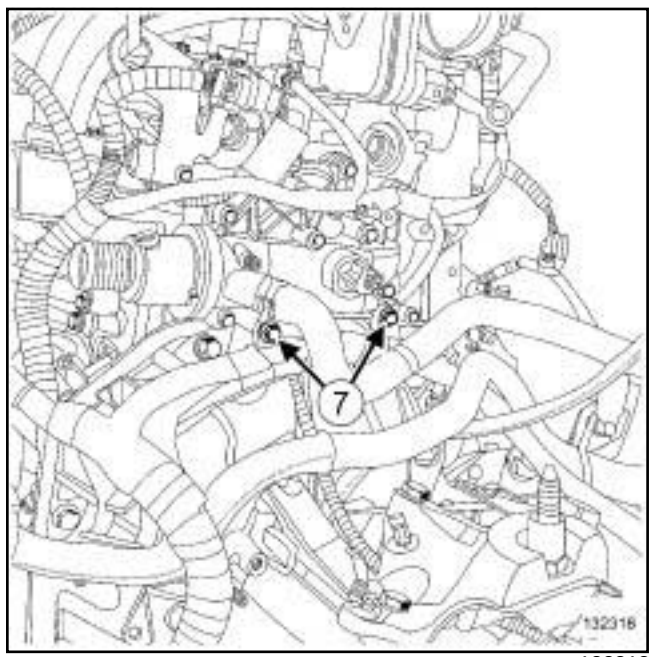
❏ Disconnect the connector (**4**) from the reverse gear switch.

❏ Unclip the reverse gear switch at (**5**) .



132321

❏ Remove the bolt (**6**) from the earth strap on the gearbox.

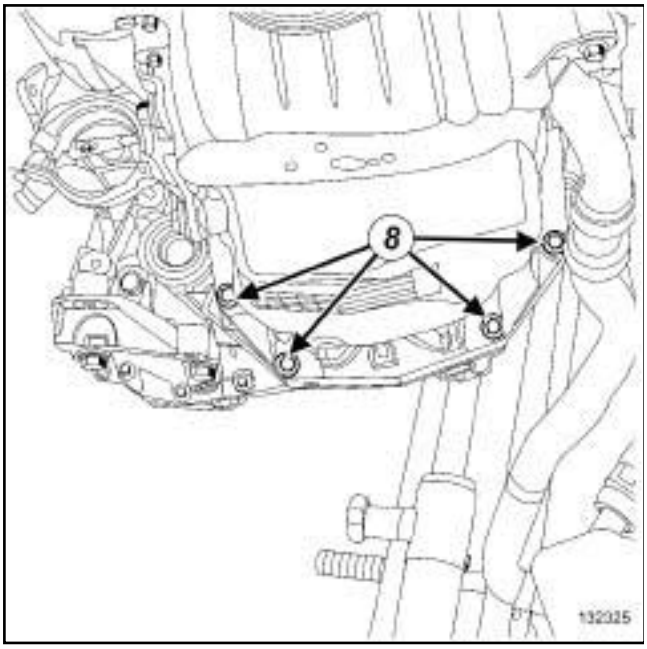


132318

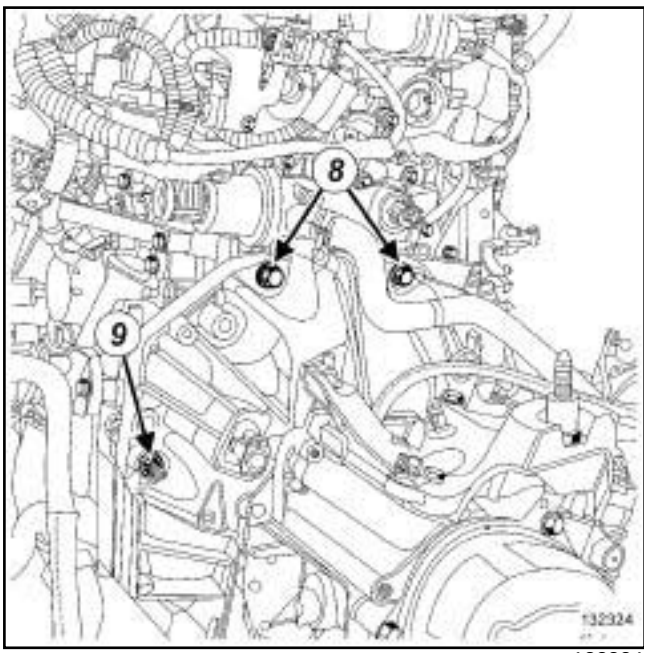
❏ Remove the bolts (**7**) from the engine wiring harness channel.

❏ Move aside the engine wiring.

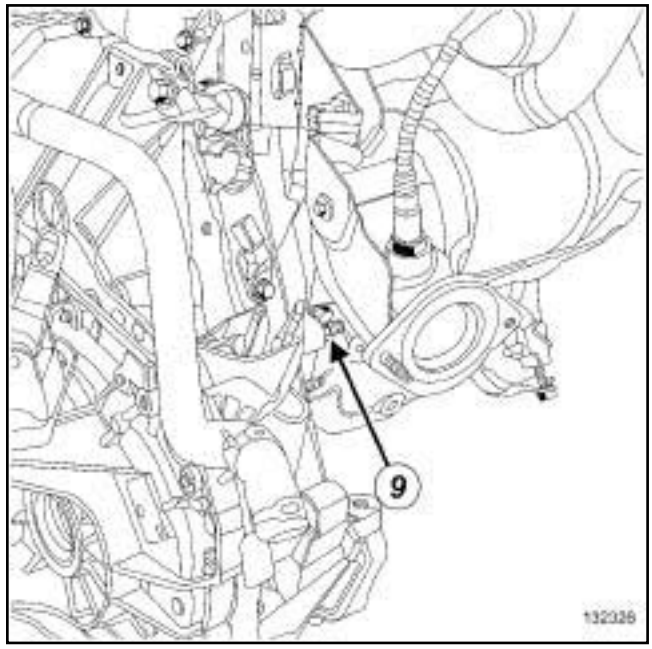
❏ Remove the starter (see **Starter: Removal - Refitting**) (16A, Starting - Charging).



132325



132324



132326

❑ Remove:

- the bolts (**8**) and the nuts (**9**) from the manual gearbox,
- the manual gearbox.

REFITTING

I - REFITTING PREPARATION OPERATION

❑

WARNING
Never operate the system when the slave cylinder is removed (even if it is connected to the clutch pedal). There is a risk that the hydraulic piston and the slave cylinder stop will be ejected.

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

WARNING
Do not grease the clutch shaft splines.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the manual gearbox.

❑ Torque tighten the **manual gearbox nuts and bolts (44 N.m)**.

K4M, and JR5

❑ Fit the engine wiring.

❑ Refit:

- the starter (see **Starter: Removal - Refitting**) (16A, Starting - Charging),
- the bolts of the engine wiring channel,
- the earth strap bolt on the gearbox.

❑ Torque tighten the **earth strap bolt on the gearbox (44 N.m)**.

❑ Connect the reverse gear switch connector.

❑ Clip on the reverse gear switch.

❑ Refit the suspended engine mounting support on the gearbox.

❑ Torque tighten the **support bolts for the suspended engine mounting on the gearbox (62 N.m)**.

❑ Connect the TDC sensor connector.

❑ Refit the engine - gearbox assembly on the.

III - FINAL OPERATION

❑ Refit:

- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (10A, Engine and peripherals),
- the differential output seals (see **21A**, **Manual gearbox**, **Differential output seal: Removal - Refitting**, page **21A-38**) (21A, Manual gearbox),
- the front right-hand driveshaft (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) .
- the front left-hand driveshaft (see **29A**, **Driveshafts**, **Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) ,
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (31A, Front axle components),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- 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),
- the front wheels (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the air filter unit (see **Air filter unit: Removal - Refitting**) (12A, Fuel mixture),
- the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❑ Refill:

- the engine cooling system (see **Cooling system: Draining - Refilling**) (19A, Cooling),
- the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) ,
- the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (62A, Air conditioning).

❑ Refit the engine undertray.

IMPORTANT
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Manual gearbox: Precautions for the repair**) .

REMOVAL

I - REPAIR PREPARATION OPERATION

❑ Remove the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

❑ Position the gearbox on the component support (see **Gearbox support equipment: Use**) .

II - REMOVAL OPERATION.

❑ Remove:

- the fifth gear housing (see **5th gear housing: Removal - Refitting**) ,
- the fifth gear synchroniser and pinions (see **5th gear sprockets and synchronisers: Removal - Refitting**) ,
- the mechanism housing (see **Mechanism housing: Removal - Refitting**) ,
- the gearbox shafts (see **Gearbox shaft: Removal - Refitting**) ,
- the differential (see **Manual gearbox differential: Removal - Refitting**) .

III - REPAIR OPERATION

❑ Strip down the output shaft (see **Output shaft: Stripping - Rebuilding**) .

❑ Check the shafts (see **Manual gearbox: Check**) .

❑ Remove:

- the differential bearings (see **Manual gearbox differential bearing: Removal - Refitting**) ,
- the bearings of the mechanism housing (see **Mechanism housing bearing: Removal - Refitting**) ,
- the bearings of the clutch housing (see **Clutch housing bearing: Removal - Refitting**) ,
- the manual gearbox selector shaft (see **Manual gearbox selector shaft: Removal - Refitting**) .

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Clean all the removed parts (see **Manual gearbox: Precautions for the repair**) .

❑ Replace worn or damaged parts.

❑ Parts always to be replaced:

- the lip seals,
- the O-rings,
- the clutch thrust bearing guide,
- the gear lock rings,
- the roll pins,
- the input and output shaft bearing circlips,
- the synchroniser hub springs,
- the removed bearings,
- the selector shaft rings,
- the spy seals,
- the hydraulic clutch thrust bearing (if equipped),
- the magnet.

II - REFITTING OPERATION

❑ Refit:

- the gearbox selector shaft (see **Manual gearbox selector shaft: Removal - Refitting**) ,
- the bearings of the clutch housing (see **Clutch housing bearing: Removal - Refitting**) ,
- the bearings of the mechanism housing (see **Mechanism housing bearing: Removal - Refitting**) ,
- the differential bearings (see **Manual gearbox differential bearing: Removal - Refitting**) ,
- the differential (see **Manual gearbox differential: Removal - Refitting**) .

❑ Rebuild the output shaft (see **Output shaft: Stripping - Rebuilding**) .

❑ Refit:

- the gearbox shafts (see **Gearbox shaft: Removal - Refitting**) ,
- the mechanism housing (see **Mechanism housing: Removal - Refitting**) ,
- the fifth gear synchroniser and pinions (see **5th gear sprockets and synchronisers: Removal - Refitting**) ,

- the fifth gear housing (see **5th gear housing: Removal - Refitting**) .

III - FINAL OPERATION

❑ Remove the gearbox from the component support (see **Gearbox support equipment: Use**) .

❑ Refit the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

JH1 or JH3 or JR5

IMPORTANT
To avoid all risk of damage to the systems, apply the safety and cleanliness instructions and operation recommendations before carrying out any repair (see **Manual gearbox: Precautions for the repair**) .

REMOVAL

I - REPAIR PREPARATION OPERATION

❏ Remove the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

❏ Position the gearbox on the component support (see **Gearbox support equipment: Use**) .

II - REMOVAL OPERATION

❏ Remove:

- the fifth gear housing (see **5th gear housing: Removal - Refitting**) ,
- the fifth gear synchroniser and pinions (see **5th gear sprockets and synchronisers: Removal - Refitting**) ,
- the mechanism housing (see **Mechanism housing: Removal - Refitting**) ,
- the gearbox shafts (see **Gearbox shaft: Removal - Refitting**) ,
- the differential (see **Manual gearbox differential: Removal - Refitting**) .

III - REPAIR OPERATION

❏ Strip down the output shaft (see **Output shaft: Stripping - Rebuilding**) .

❏ Remove:

- the differential bearings (see **Manual gearbox differential bearing: Removal - Refitting**) ,
- the bearings of the mechanism housing (see **Mechanism housing bearing: Removal - Refitting**) ,
- the bearings of the clutch housing (see **Clutch housing bearing: Removal - Refitting**) ,
- the gearbox selector shaft (see **Manual gearbox selector shaft: Removal - Refitting**) .

❏ Use **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) to clean all of the removed parts.

❏ Check (see **Manual gearbox: Check**) :

- the pinions (teeth, claws, friction cone, inner wall),
- the synchroniser hubs,
- the synchroniser rings,
- the bearings.

❏ Replace worn or damaged parts.

REFITTING

I - REFITTING PREPARATION OPERATION

❏ Parts always to be replaced:

- the lip seals,
- the O-rings,
- the clutch thrust bearing guide,
- the gear lock rings,
- the roll pins,
- the input and output shaft bearing circlips,
- the selector rod hub springs,
- the hydraulic clutch slave cylinder (if fitted),
- the magnet,
- the selector shaft rings,
- the lock ring of the differential,
- the differential retaining nut.

II - REFITTING OPERATION

❏ Refit:

- the gearbox selector shaft (see **Manual gearbox selector shaft: Removal - Refitting**) ,
- the bearings of the clutch housing (see **Clutch housing bearing: Removal - Refitting**) ,
- the bearings of the mechanism housing (see **Mechanism housing bearing: Removal - Refitting**) ,
- the differential bearings (see **Manual gearbox differential bearing: Removal - Refitting**) .

❏ Rebuild the output shaft (see **Output shaft: Stripping - Rebuilding**) .

JH1 or JH3 or JR5

III - REMOVAL OPERATION

❑ Refit:

- the differential (see **Manual gearbox differential: Removal - Refitting**) ,
- the gearbox shafts (see **Gearbox shaft: Removal - Refitting**) .

❑ Adjust the shafts (see **Gearbox shaft: Adjustment**) if replacing a shaft or housing.

❑ Refit:

- the mechanism housing (see **Mechanism housing: Removal - Refitting**) ,
- the fifth gear synchroniser and pinions (see **5th gear sprockets and synchronisers: Removal - Refitting**) ,
- the fifth gear housing (see **5th gear housing: Removal - Refitting**) .

IV - FINAL OPERATION

❑ Remove the gearbox from the component support (see **Gearbox support equipment: Use**) .

❑ Refit the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

JB1 or JH1 or JH3 or JR5

Special tooling required	
Bvi. 945	Mandrel for fitting the sun-wheel seal.
Bvi. 1666	Tool for fitting differential seals.

Equipment required
roll pin punch

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

JB1 or JH1

❑ 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-8**) .

JH3 or JR5

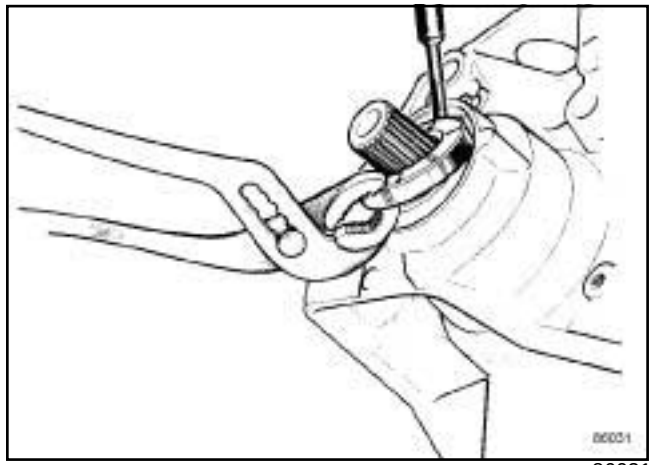
❑ Drain the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❑ Remove:

- the wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front wheel driveshaft for the side in question (see **29A**, **Driveshafts**, **Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) or (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

JB1 or JH1

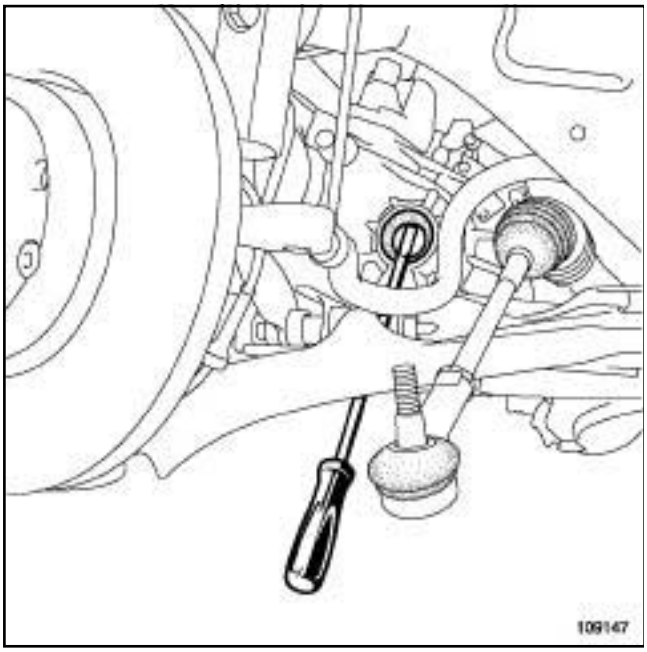

86031

❑ Tap the base of the differential output seal using a **roll pin punch** and a small hammer to rotate it in its housing.

❑ Remove the differential output seal using pliers, taking care not to damage the splines on the sunwheel.

JB1 or JH1 or JH3 or JR5

JH3 or JR5



109147

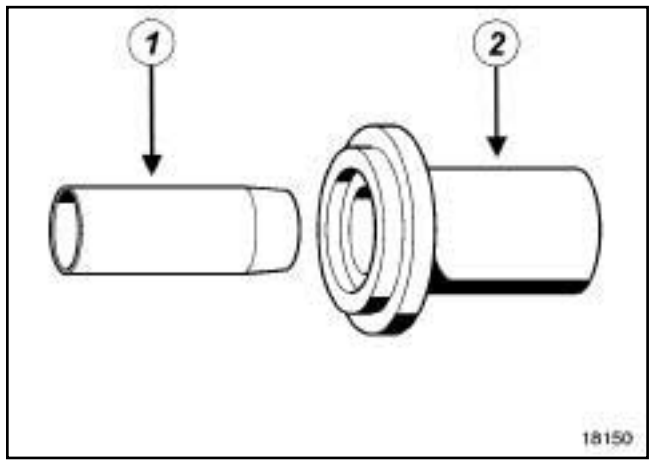
❏ Tap the base of the differential output seal using a **roll pin punch** and a small hammer to detach it and rotate it in its housing.

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

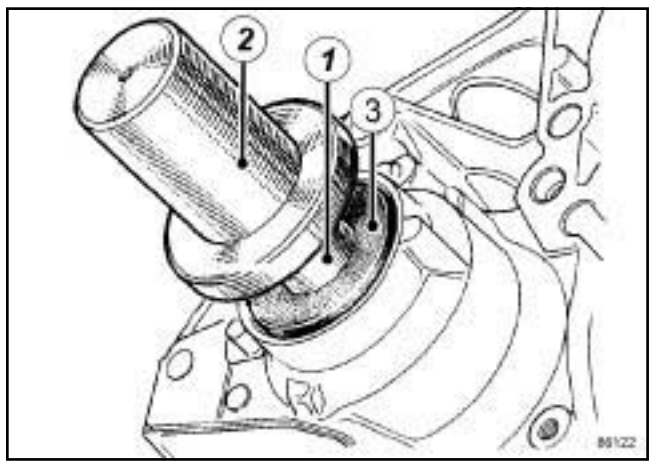
REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

JB1 or JH1



18150



86122

❏ The differential output seal (**3**) is refitted using the **(Bvi. 945)** consisting of:

- a seal protector (**1**) ,
- a mandrel (**2**) for fitting the differential output seal (**3**) .

❏ Lubricate the external surface of the seal protector.

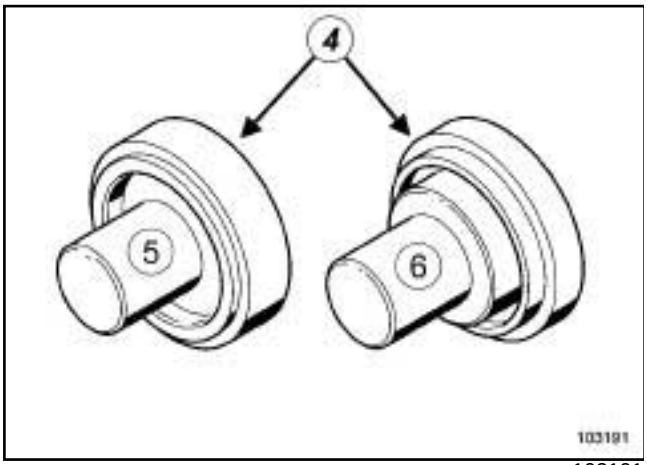
❏ Fit:

- the seal protector (**1**) onto the sunwheel,
- the differential output seal (**3**) onto the seal protector (**1**) .

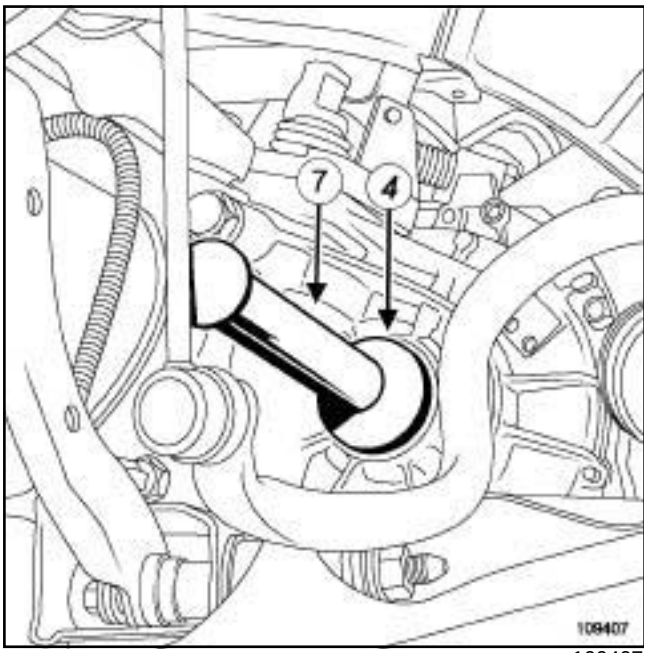
❏ Tap the mandrel (**2**) with a copper hammer to fully seat the differential output seal (**3**) .

JB1 or JH1 or JH3 or JR5

JH3 or JR5



103191



109407

❑ The differential output seal is refitted using the **(Bvi. 1666)** (**4**) consisting of:

- a mandrel (**5**) for the right-hand side,
- a mandrel (**6**) for the left-hand side.

❑ Lubricate the internal surface of the differential output seal.

II - FINAL OPERATION

JB1 or JH1

❑ Refit:

- the front right-hand driveshaft (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

JH3 or JR5

❑ Refit:

- the front wheel driveshaft on the side concerned (see **29A**, **Driveshafts**, **Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) or (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) ,
- the wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❑ Fill the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

JB1

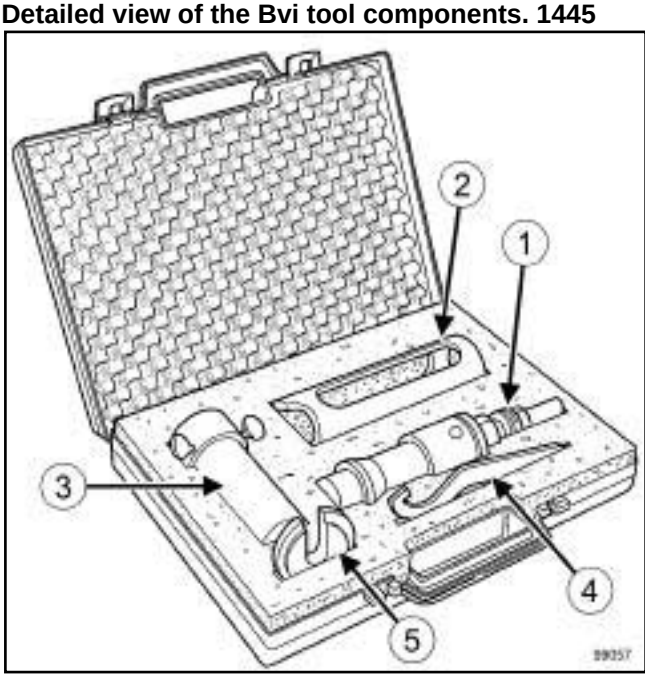
Special tooling required	
Bvi. 1828	Snap rivet and pressure plate for removal and refitting of the guide tube (JH1 gearbox)

Note:

The lip seal and the primary shaft bearing are built into the thrust pad guide tube.

It is lubricated via an aperture into the housing bore.

Detailed view of the Bvi tool components. 1445



99057

(**1**) tightening clamp
(**2**) sleeve
(**3**) Sender
(**4**) key
(**5**) split ring

❏ The gearbox must be removed.

REMOVAL

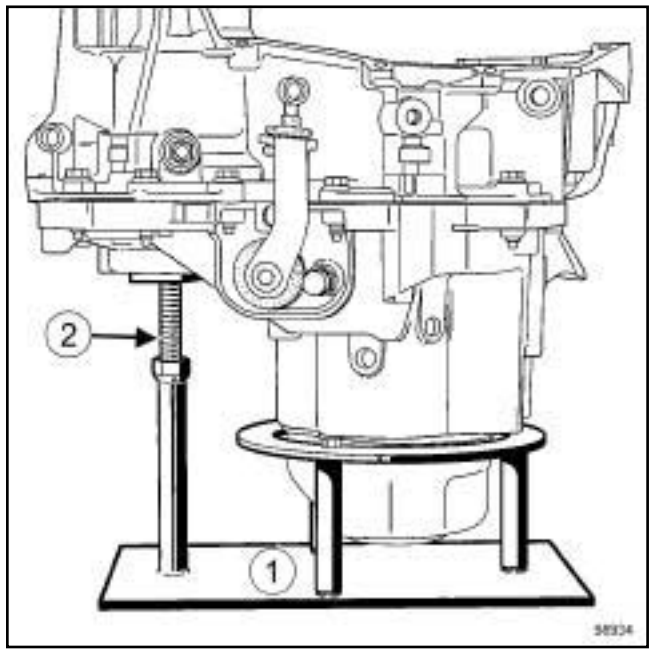
I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Disconnect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

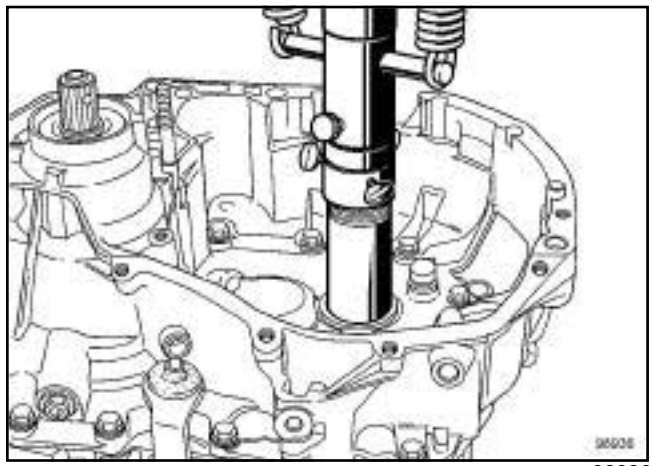
❏ Remove the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



98934

❏ Position the gearbox on the mounting (**1**) adjusting the adjustable support (**2**) .

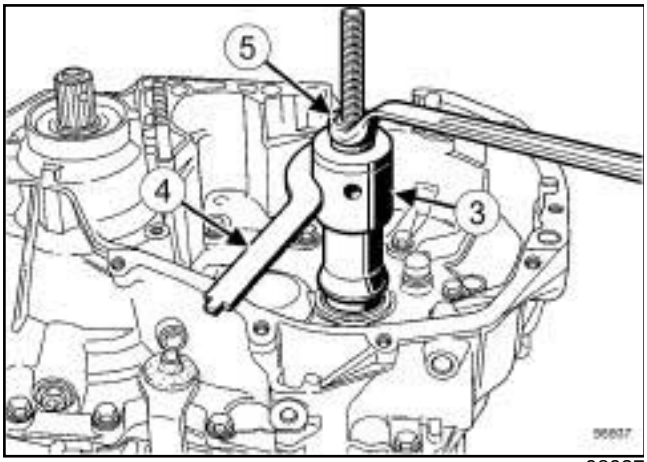


98936

❏ Gently remove the guide tube with a press using the **(Bvi. 1828)**.

❏ Degrease the guide tube.

JB1

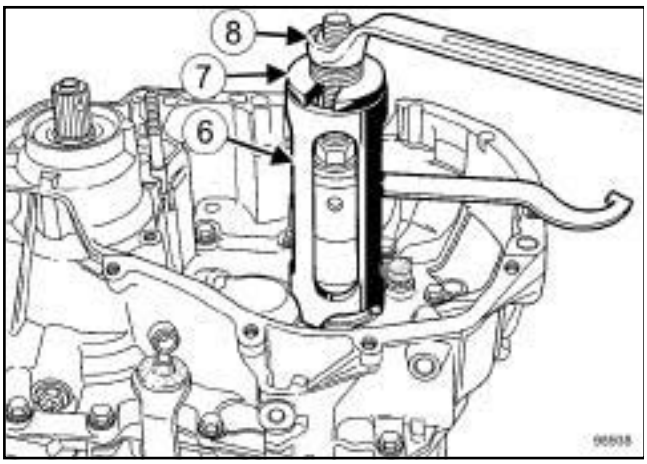


98937

❏ Place the tightening clamp (**3**) onto the tube.

❏ Lock the tightening clamp using the spanner (**4**) .

❏ Tighten the nut firmly (**5**) .



98938

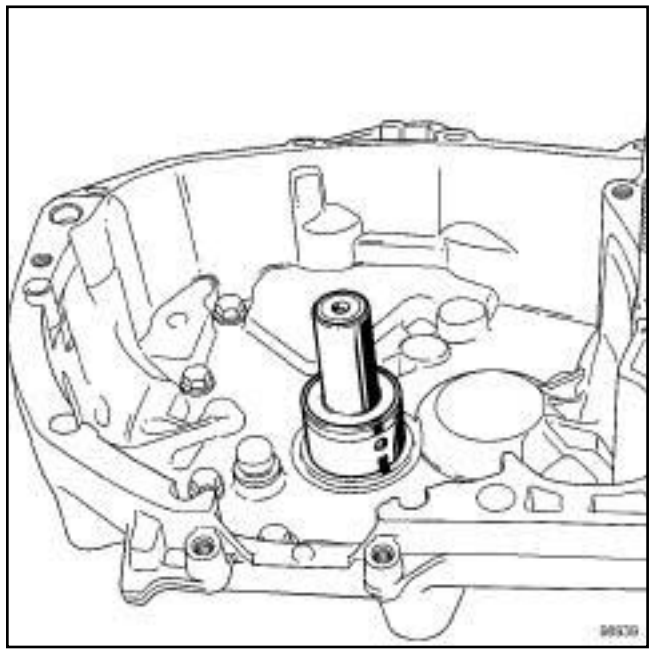
❏ Position the sleeve (**6**) and the split ring (**7**) .

❏ Turn the upper nut (**8**) .

❏ Gently extract the guide tube.

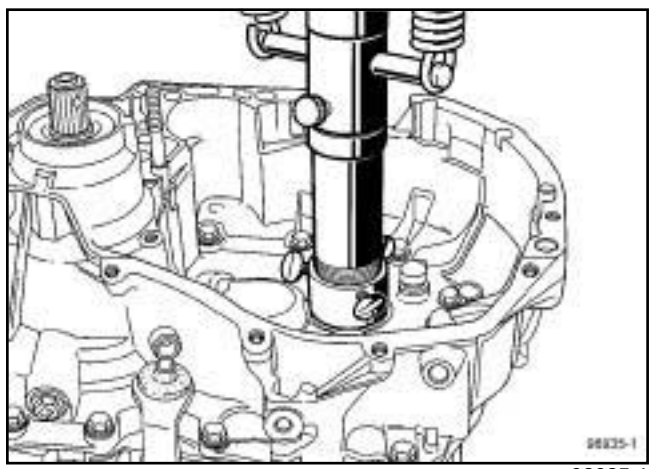
REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



98939

❏ Position the new guide tube on the clutch housing.



98935-1

❏ Gently remove the guide tube with a press and the **(Bvi. 1828)**.

II - FINAL OPERATION.

❏ Refit the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox: Removal - Refitting**, page **21A-24**) (MR 411, 21A, Manual gearbox).

❏ Connect the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

Input shaft lip seal: Removal - Refitting

JH1 or JH3 or JR5

❑ Replace the lip seal after having opened the gearbox (see **Clutch housing bearing: Removal - Refitting**) (Technical Note 6029A, 21A, Manual gearbox).

JB1 or JH1 or JH3 or JR5

Special tooling required	
Bvi. 1934	Socket for removing/refitting reverse gear switch

Tightening torques ▽	
reverse gear switch	**23 N.m**

REMOVAL

I - REMOVAL PREPARATION OPERATION

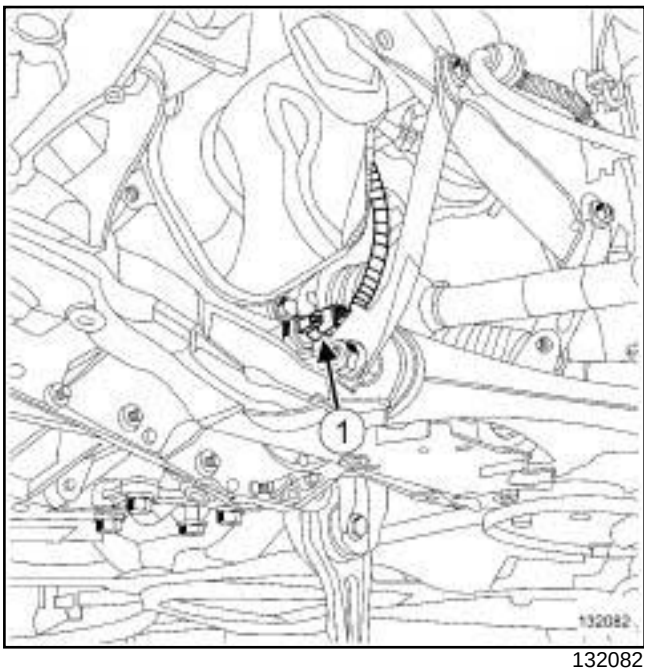
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

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

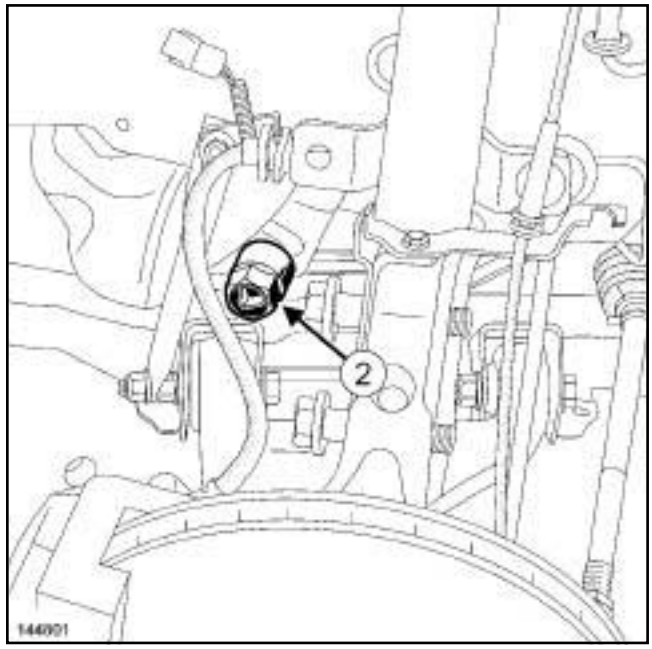
❏ Remove the engine undertray.

II - OPERATION FOR REMOVAL OF PART CONCERNED



132082

❏ Disconnect the connector (**1**) from the reverse gear switch.



144801

❏ Remove the reverse gear switch using the tool **(Bvi. 1934)** (**2**) .

Note:

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

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

❏ Fill the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❏ Refit the engine undertray.

❏ Refit:

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

JB1 or JH1 or JH3 or JR5

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

Sequential gearbox: Precautions for the repair

D4F, and JH1

Equipment required
Diagnostic tool

I - SEQUENTIAL GEARBOX

IMPORTANT

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

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.

II - SEQUENTIAL GEARBOX COMPUTER

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

III - ELECTRO-HYDRAULIC UNIT

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

Be careful not to twist the high pressure pipes when removing the electro-hydraulic unit.

WARNING

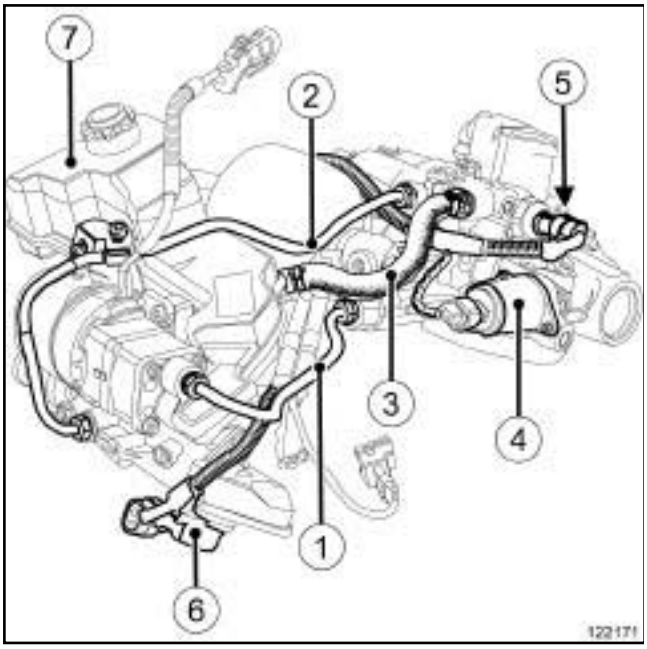
After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

IV - GEAR SELECTION SENSOR

WARNING

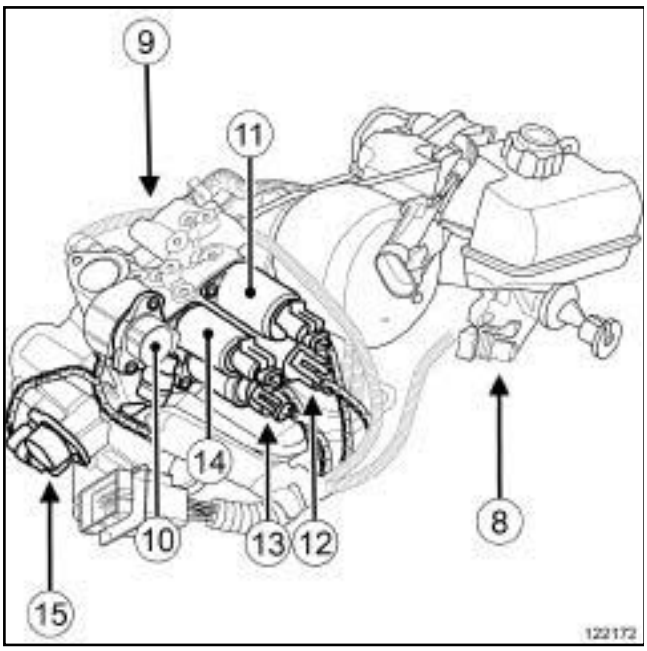
To remove the gear selection sensor it is essential that you shift to first gear before removal.

D4F, and JH1



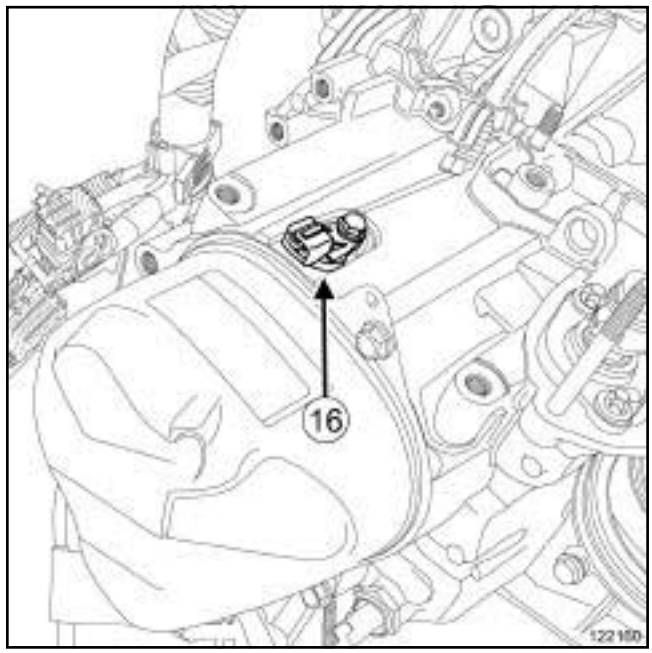
122171

(**1**) Actuator module high pressure supply pipe
(**2**) Clutch stay high pressure supply pipe
(**3**) Reservoir return hose
(**4**) Engagement solenoid valve 2
(**5**) Solenoid valve unit pressure sensor
(**6**) Clutch position sensor
(**7**) Tank



122172

(**8**) Pump unit
(**9**) Actuator module
(**10**) Gear selection sensor
(**11**) Clutch solenoid valve
(**12**) Engagement solenoid valve 1
(**13**) Selection solenoid valve 3
(**14**) Selection solenoid valve 4
(**15**) Engagement sensor



122160

(**16**) Sequential gearbox speed sensor

JH1

Special tooling required	
Mot. 1018	8 mm square engine drain plug spanner.

Equipment required
oil recovery tray

Tightening torques ▽	
drain plug	**25 N.m**

Oil capacity

Gearbox type	Oil capacity (in litres)
JH1	**2.8**
JA3	**2.8**
JA5	**2.5**

DRAINING

I - DRAINING PREPARATION OPERATION

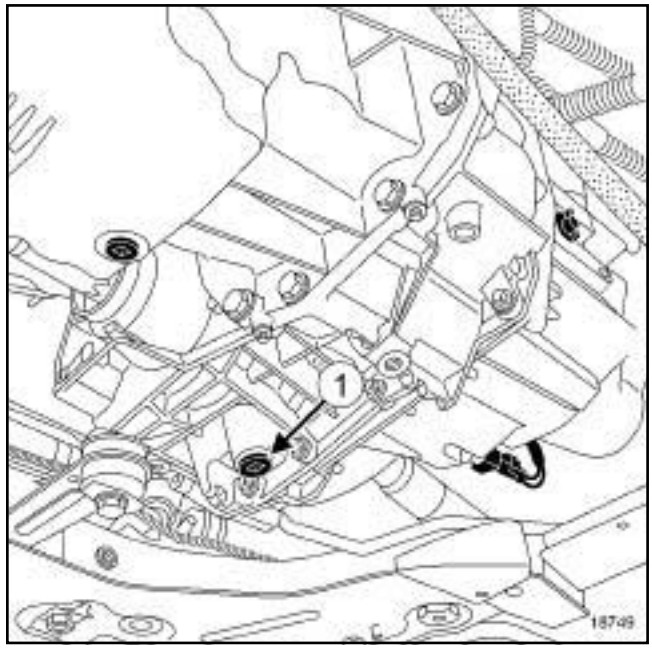
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the engine undertray bolts,
- the engine undertray.

II - DRAINING OPERATION

❏ Fit a **oil recovery tray** under the gearbox.



18749

❏ Remove:

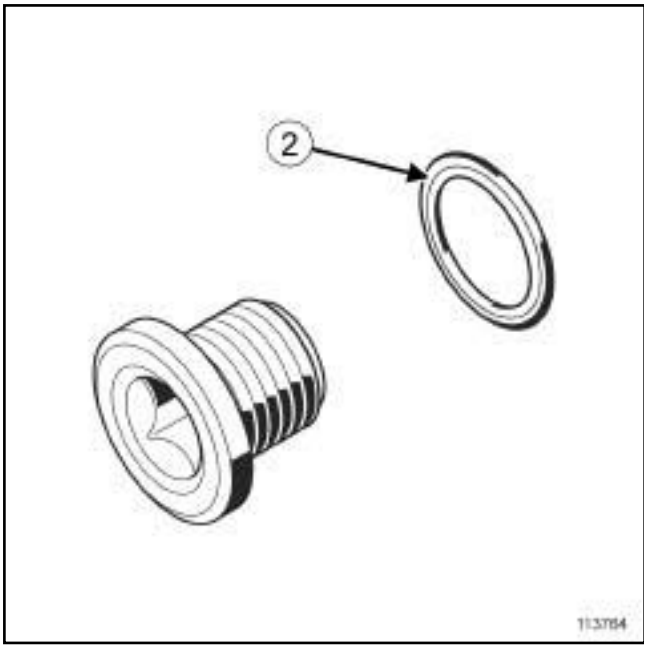
- the gearbox drain plug (**1**) using the tool **(Mot. 1018)**,
- the drain plug seal.

❏ Let the oil run into the **oil recovery tray**.

FILLING

I - FILLING PREPARATION OPERATION

❏ Always replace the manual gearbox drain plug seal.



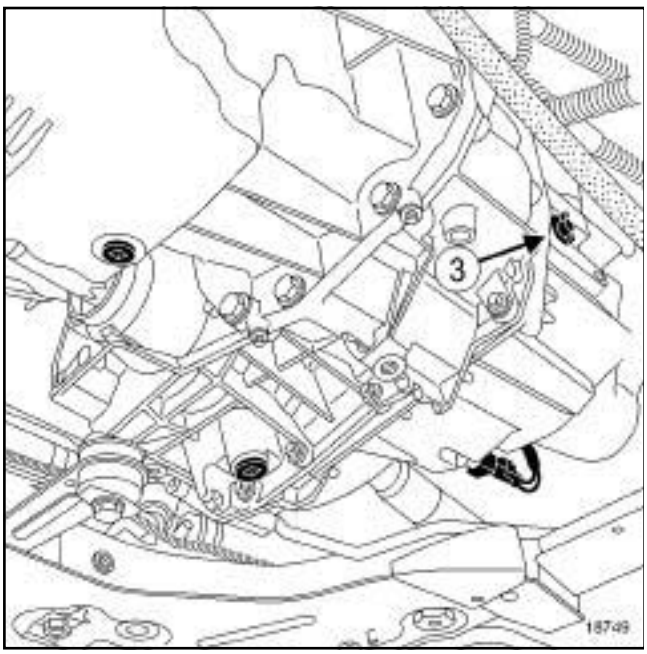
113764

❏ Position the slot (**2**) of the new seal towards the drain plug.

❏ Refit the drain plug fitted with its new seal.

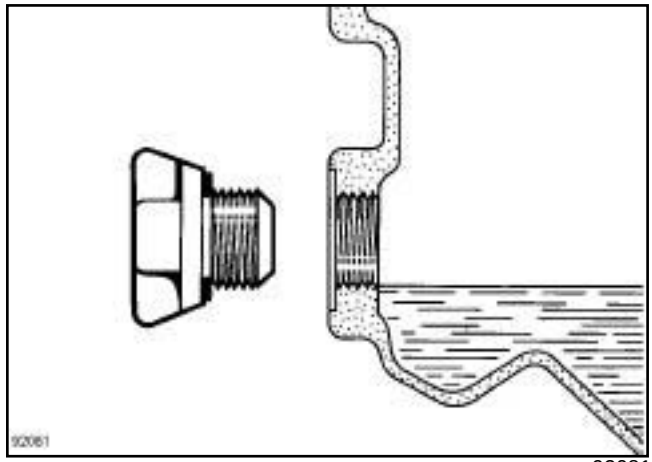
❏ Torque tighten the **drain plug (25 N.m)**.

II - FILLING OPERATION



18749

❏ Remove the filler plug (**3**) .



92081

❏ Fill the gearbox using a syringe containing recommended oil (see **21A**, **Manual gearbox**, **Manual gearbox oil: Specifications**, page **21A-1**) (Technical Note 6012A, 04A, Lubricants) until the oil overflows out of the filler cap hole.

❏ Refit the filler plug.

III - FINAL OPERATION

❏ Wipe any oil run-off with a cloth.

❏ Remove the **oil recovery tray**.

❏ Refit the engine undertray.

D4F, and JH1

Special tooling required	
Mot. 445	Oil filter strap wrench.

Equipment required
Diagnostic tool

IMPORTANT
Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

IMPORTANT
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

Note:
To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

REMOVAL

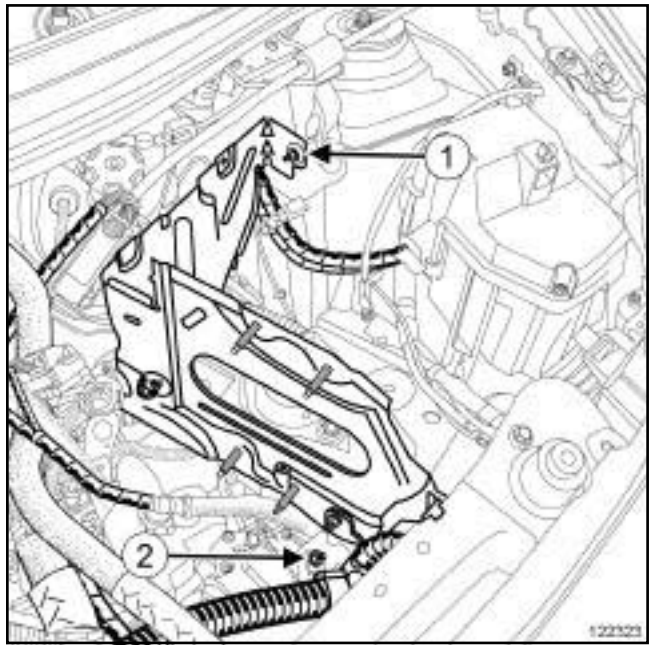
I - REMOVAL PREPARATION OPERATION

❑ Remove:

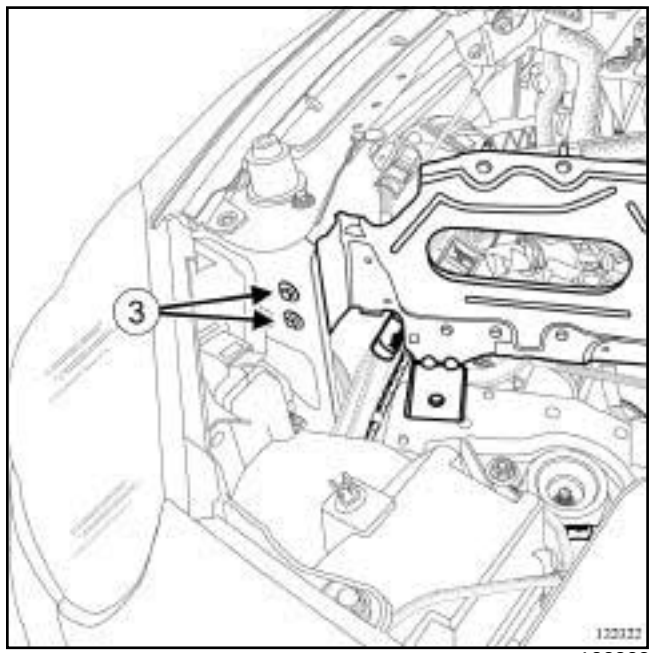
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

❑ Detach from the petrol injection computer mounting:

- the cooling hose,
- the sequential gearbox computer wiring harness,
- the petrol injection computer wiring harness,
- the battery wiring harness.



122323



122322

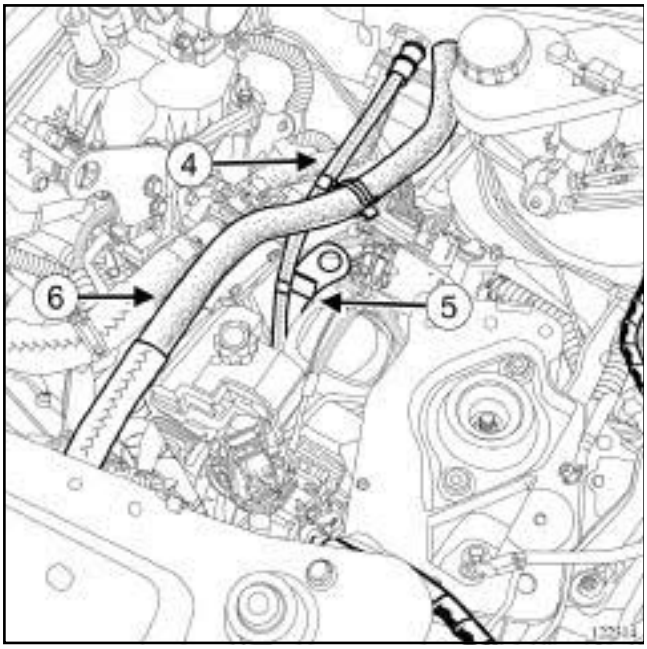
❑ Remove:

- the petrol injection computer mounting nut (**1**) ,
- the engine wiring harness nut (**2**) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (**3**) .

❑ Remove the engine wiring harness from the petrol injection computer mounting.

❑ Remove the petrol injection computer mounting.

D4F, and JH1



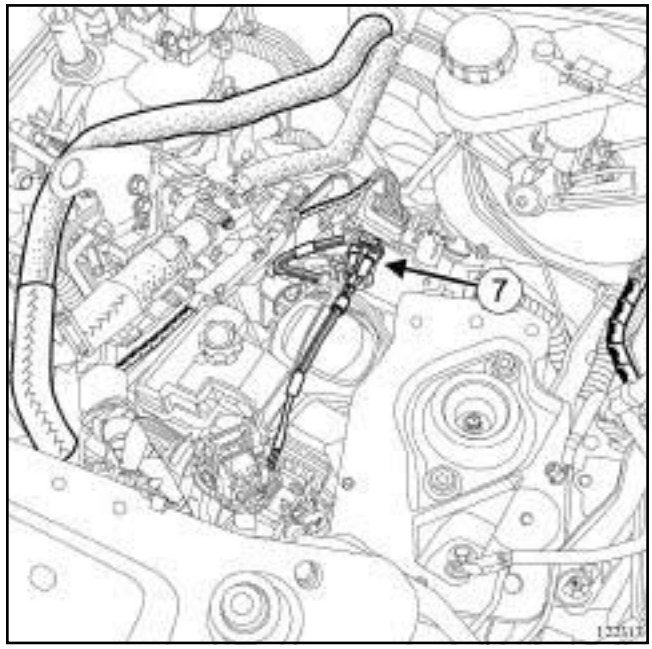
122314

❏ Detach the breather pipe (**4**) :

- from the sequential gearbox lifting eye (**5**) ,
- from the cooling hose (**6**) .

❏ Remove:

- the breather pipe (**4**) from the sequential gearbox,
- the lifting eye nut (**5**) from the sequential gearbox,
- the lifting eye (**5**) from the sequential gearbox.



122313

❏ Remove the cooling hose.

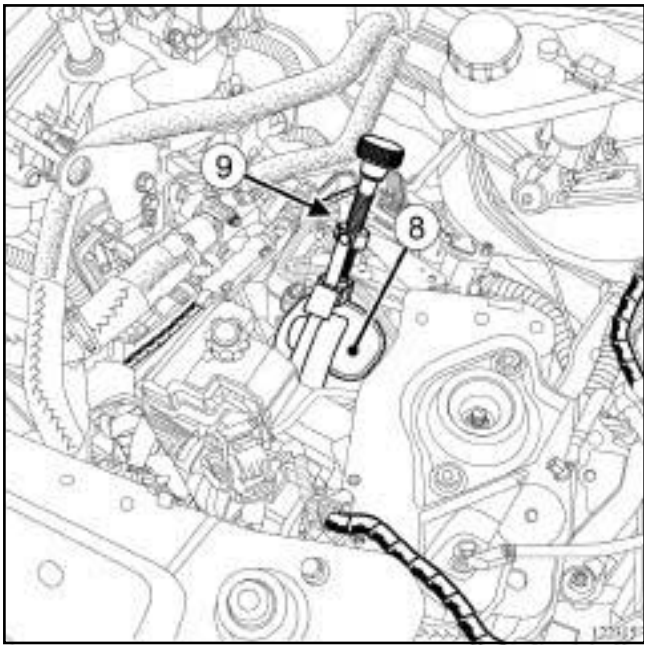
❏ Disconnect the supply connector from the pump assembly pump.

❏ Detach the pump assembly pump supply connector from the electro-hydraulic unit connector mounting.

❏ Remove the electro-hydraulic unit wiring harness.

D4F, and JH1

II - OPERATION FOR REMOVAL OF PART CONCERNED



122315

❑

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

❑ Remove the pressure accumulator (**8**) from the actuator module using the **(Mot. 445)** (**9**) .

REFITTING

I - REFITTING PREPARATION OPERATION

❑ If replacing the pressure accumulator, affix a safety label to the accumulator.

❑ It is essential to replace the pressure accumulator seal.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the pressure accumulator onto the actuator module using the **(Mot. 445)**.

III - FINAL OPERATION

❑ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.

❑ Connect the pump assembly supply connector.

❑ Refit:

- the sequential gearbox lifting eye on the sequential gearbox,
- the sequential gearbox lifting eye nut,
- the breather pipe on the sequential gearbox.

❑ Attach the breather pipe:

- to the cooling hose,
- to the sequential gearbox lifting eye.

❑ Fit:

- the petrol injection computer support,
- the engine wiring harness on the petrol injection computer mounting.

❑ Refit:

- the petrol injection computer mounting bolts,
- the engine wiring harness nut on the petrol injection computer mounting,
- the petrol injection computer mounting nut.

❑ Clip onto the petrol injection computer mounting:

- the battery wiring harness,
- the petrol injection computer wiring harness,
- the sequential gearbox computer wiring harness,
- the cooling hose.

❑ Refit:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

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

D4F, and JH1

❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

Special tooling required	
Ms. 583	Pipe clamps.

Equipment required
Diagnostic tool

IMPORTANT
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

The electro-hydraulic unit comprises the pump assembly and the actuator module.

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Remove:

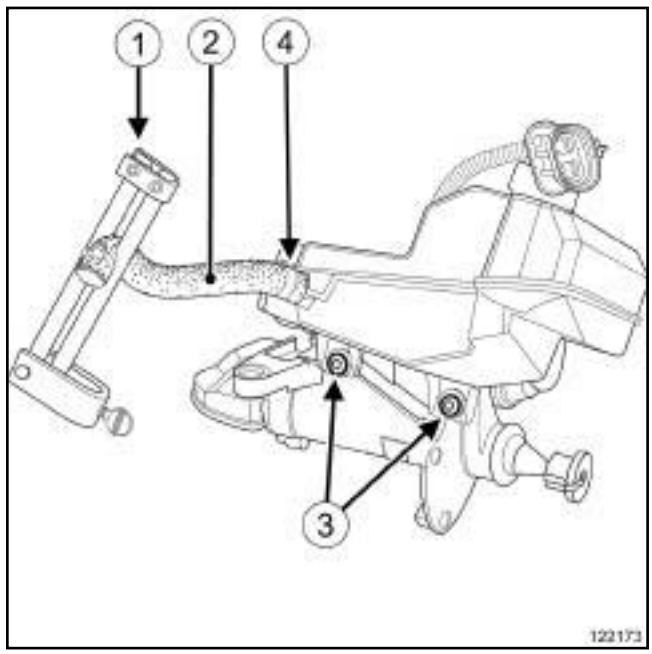
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) ,

❏ Position the **(Ms. 583)**

❏ Separate

- the pump assembly from the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Pump assembly: Removal - Refitting**, page **21B-18**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



122173

❏ Remove the **(Ms. 583)** (**1**) from the low pressure hose (**2**) .

❏ Drain the pump assembly reservoir.

❏ Remove:

- the bolts (**3**) from the pump assembly reservoir,
- the electric pump unit tank.

❏ In the event of replacement, remove:

- the clip (**4**) from the low pressure hose (**2**) ,
- the low pressure hose (**2**) .

D4F, and JH1

REFITTING

I - REFITTING PREPARATION OPERATION

❏ In the event of replacement, refit:

- the low pressure hose,
- the low pressure hose clip.

❏ It is essential to replace the pump assembly reservoir seal on the pump inlet.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the pump assembly reservoir,
- the pump assembly reservoir bolts.

III - FINAL OPERATION

❏ Assemble:

- the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) ,

❏ Remove

- the pump assembly on the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Pump assembly: Removal - Refitting**, page **21B-18**) ,
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❏ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

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

❏ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

Special tooling required	
Mot. 1390	Support for removal - refitting of engine - gearbox assembly

Equipment required
Diagnostic tool

Tightening torques ▽	
left-hand suspended engine mounting bolts	**21 N.m**
left-hand suspended engine mounting rubber pad bolts	**62 N.m**
left-hand suspended engine mounting rubber pad nut	**105 N.m**

Note:

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

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

The electro-hydraulic unit comprises the pump assembly and the actuator module.

REMOVAL

I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

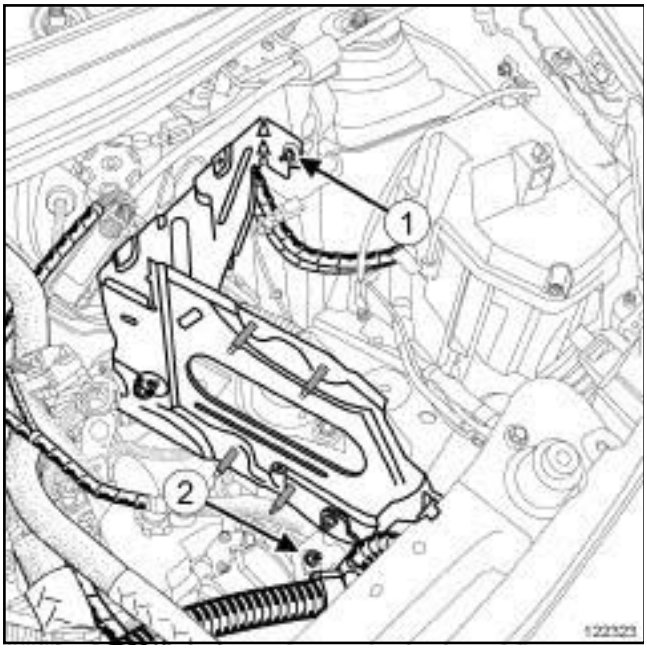
❑ Remove:

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

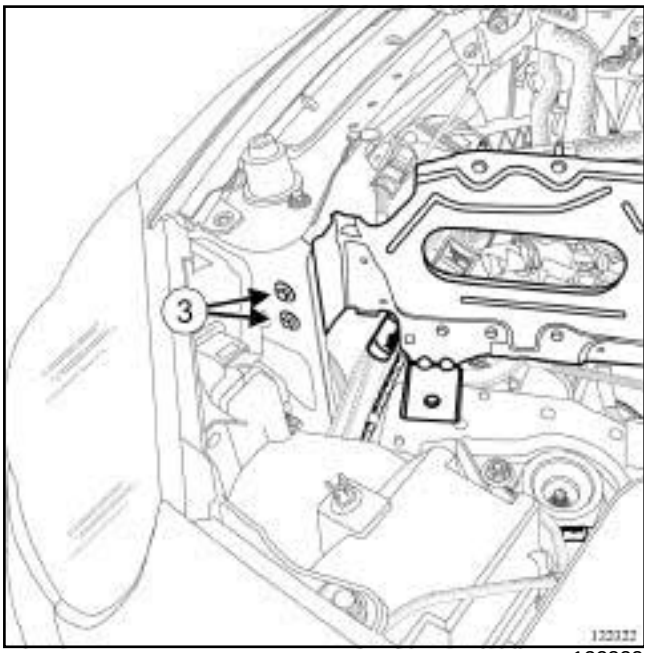
❑ Detach from the petrol injection computer mounting:

- the cooling hose,
- the sequential gearbox computer wiring harness,
- the petrol injection computer wiring harness,
- the battery wiring harness.

D4F, and JH1



122323



122322

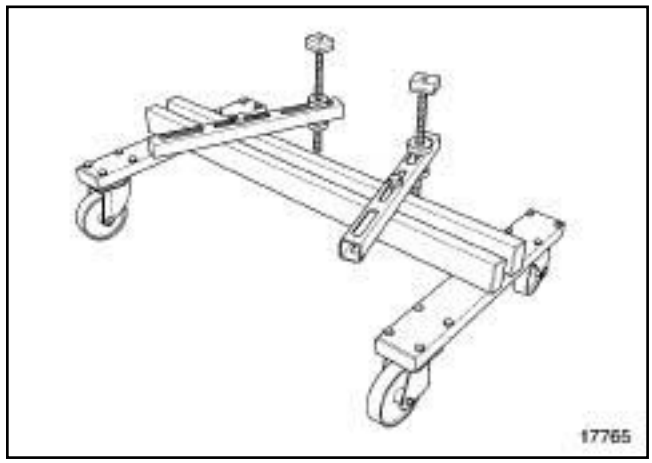
❑ Remove:

- the petrol injection computer mounting nut (**1**) ,
- the engine wiring harness nut (**2**) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (**3**) .

❑ Remove the engine wiring harness from the petrol injection computer mounting.

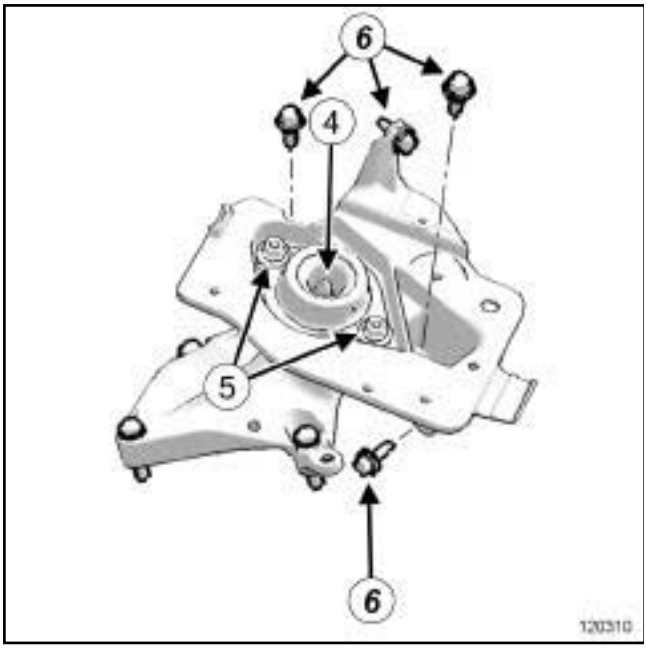
❑ Remove:

- the petrol injection computer support,
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection).



17765

❑ Support the sequential gearbox on the **(Mot. 1390)**.



120310

❏ Mark the positions:

- of the left-hand suspended engine mounting on the body,
- of the rubber pad on the left-hand suspended engine mounting.

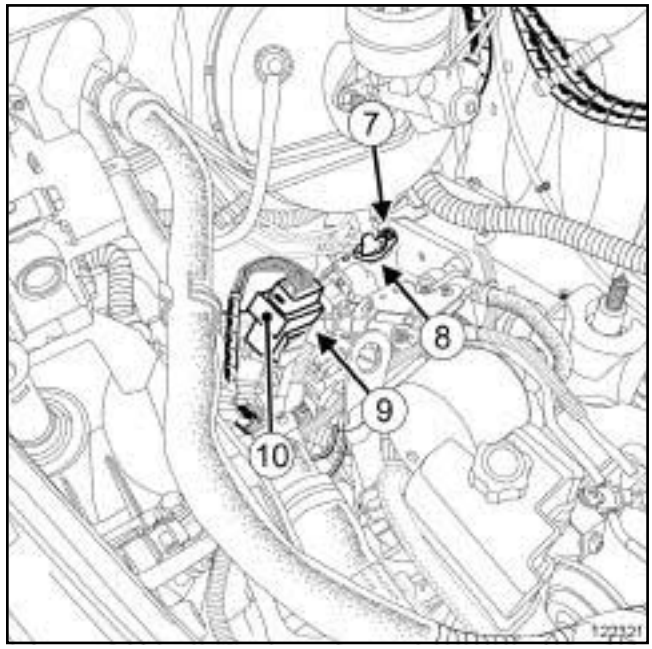
❏ Remove:

- the left-hand suspended engine mounting rubber pad nut (**4**) ,
- the left-hand suspended engine mounting rubber pad bolts (**5**) ,
- the rubber pad from the left-hand suspended engine mounting

❏ Lower the sequential gearbox to access the left-hand suspended engine mounting bolt on the body.

❏ Remove:

- the left-hand suspended engine mounting bolts (**6**) ,
- the left-hand suspended engine mounting.



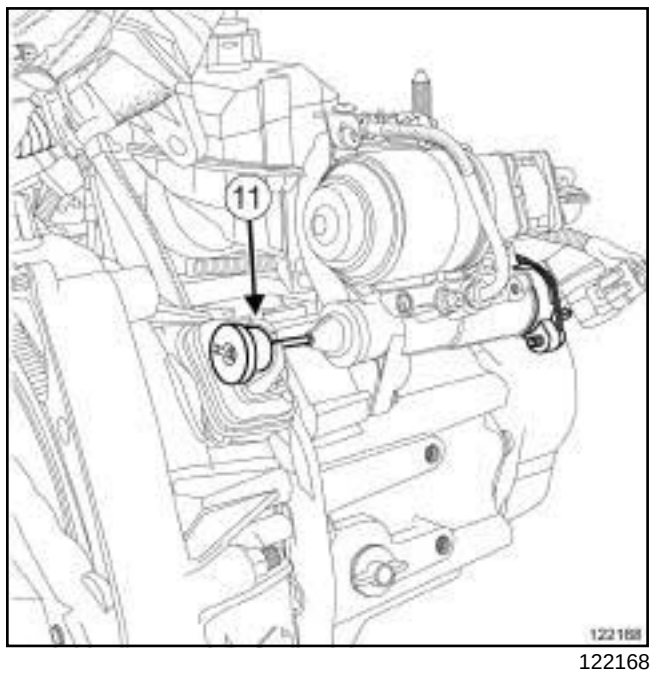
122321

❏ Remove:

- the selector shaft cover bolt (**7**) ,
- the selector shaft cover (**8**) .

❏ Disconnect the connector (**9**) from the electro-hydraulic unit by moving the lock (**10**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

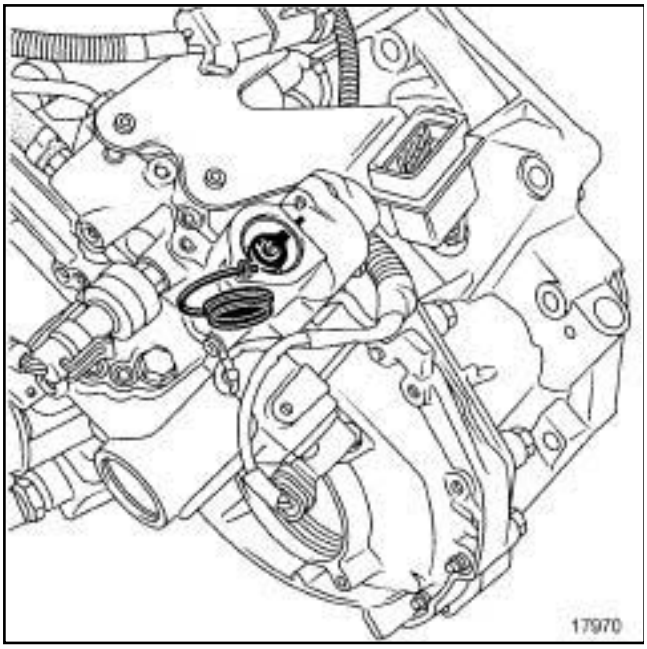


122168

❏ Remove the clutch stay cable (**11**) from the clutch fork.

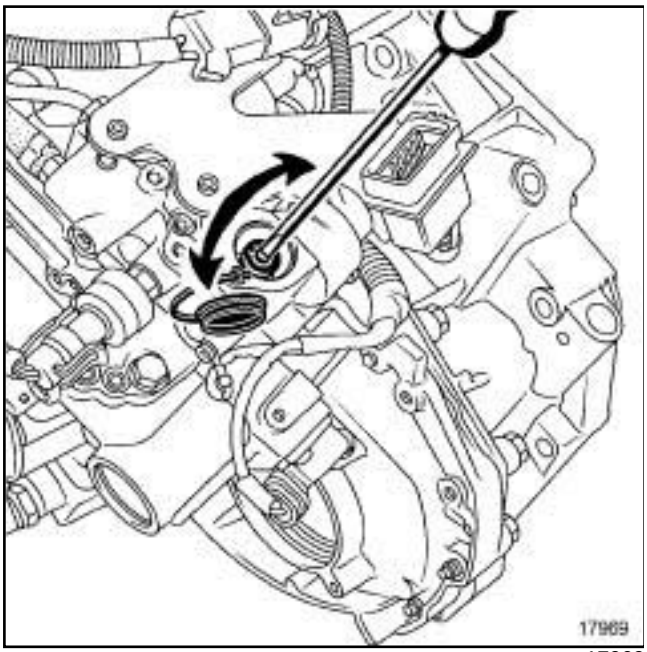
D4F, and JH1

Selector shaft locked



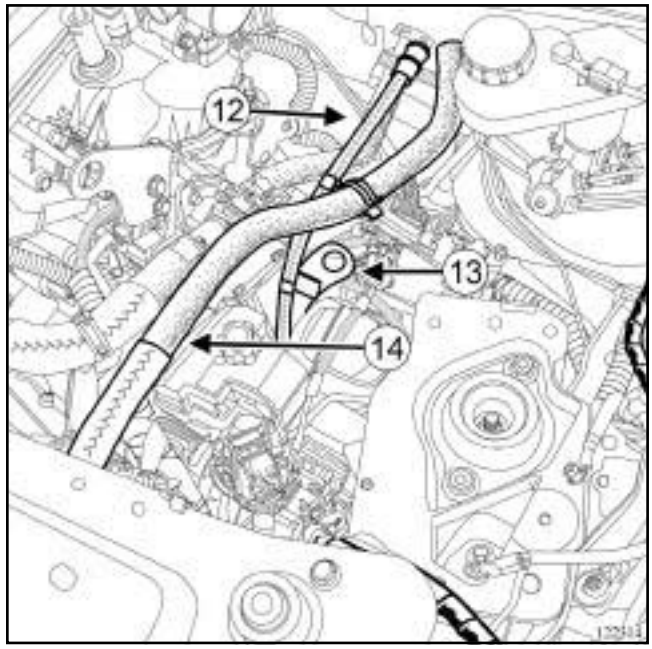
17970

Selector shaft unlocked



17969

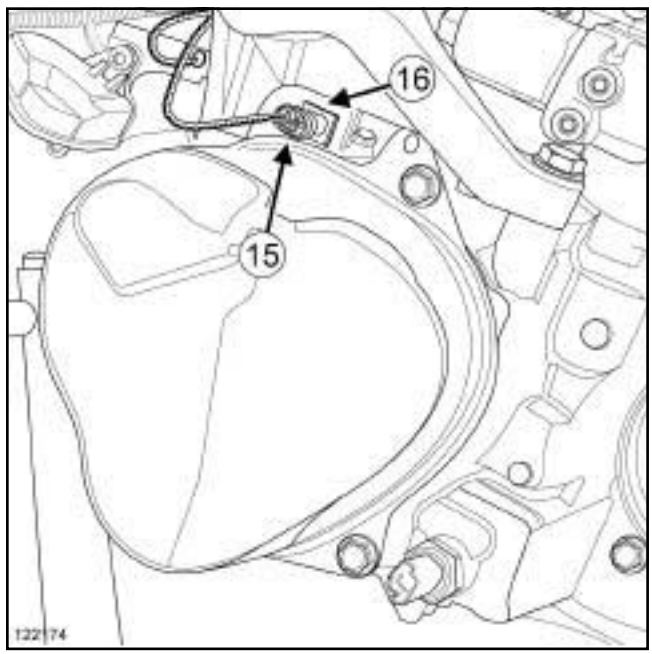
❏ Unlock the gear selector shaft by turning the shaft by a quarter of a turn using a screwdriver.



122314

❏ Detach the breather pipe (**12**) :

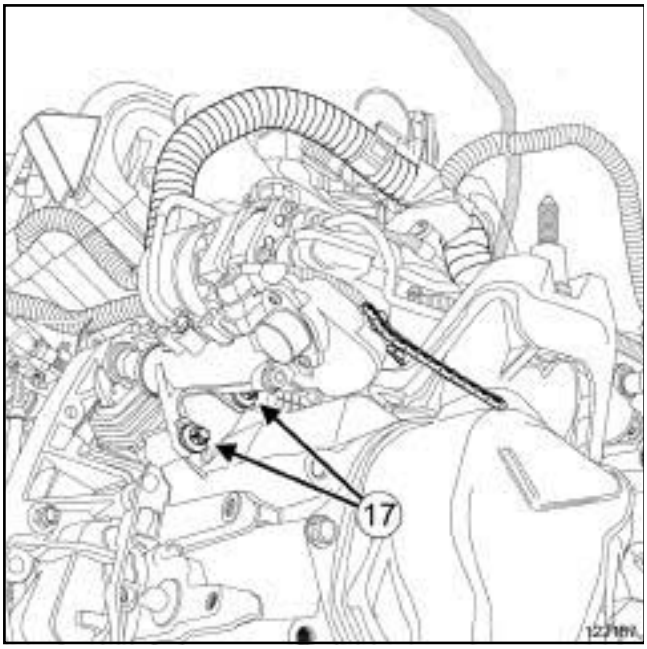
- from the sequential gearbox lifting eye (**13**) ,
- from the cooling hose (**14**) .



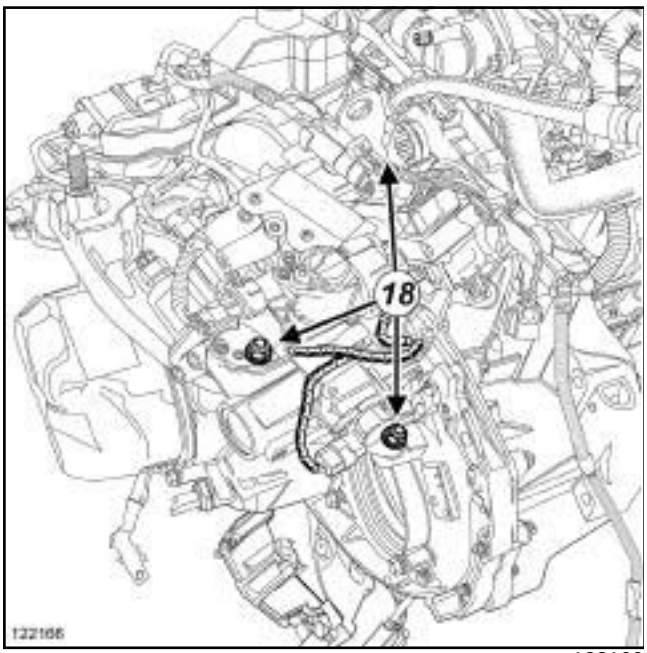
122174

❏ Disconnect the sequential gearbox speed sensor connector (**15**) using a screwdriver on the lock (**16**) .

D4F, and JH1



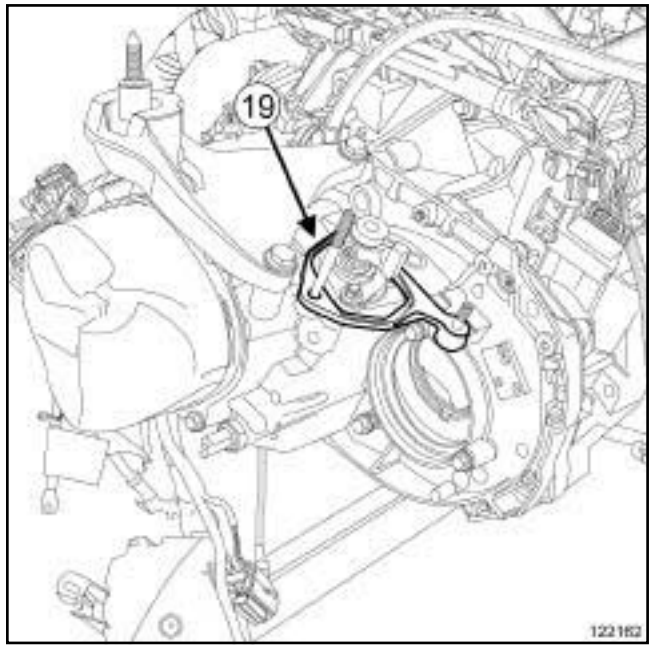
122167



122166

❏ Remove:

- the electro-hydraulic unit bolts (**17**) ,
- the electro-hydraulic unit nuts (**18**) ,
- the sequential gearbox breather pipe,
- the sequential gearbox lifting eye,
- the electro-hydraulic unit.

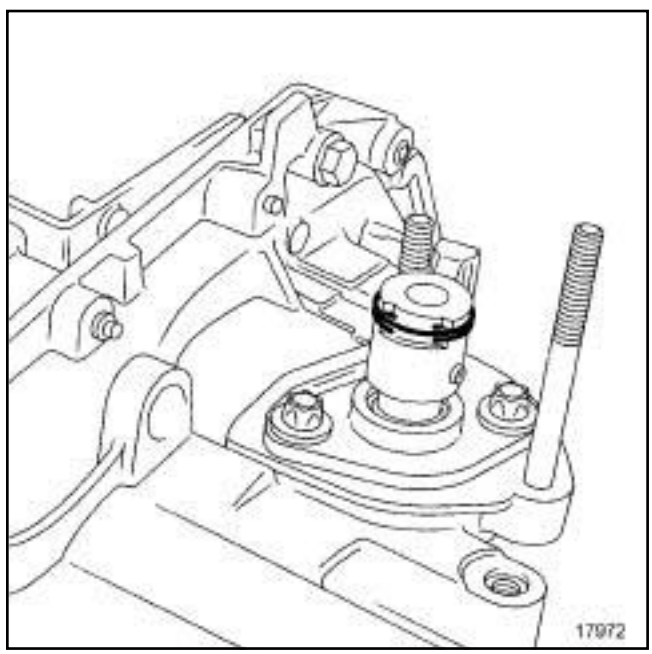


122162

❏ Remove the electro-hydraulic unit seal (**19**) .

REFITTING

I - REFITTING PREPARATION OPERATION



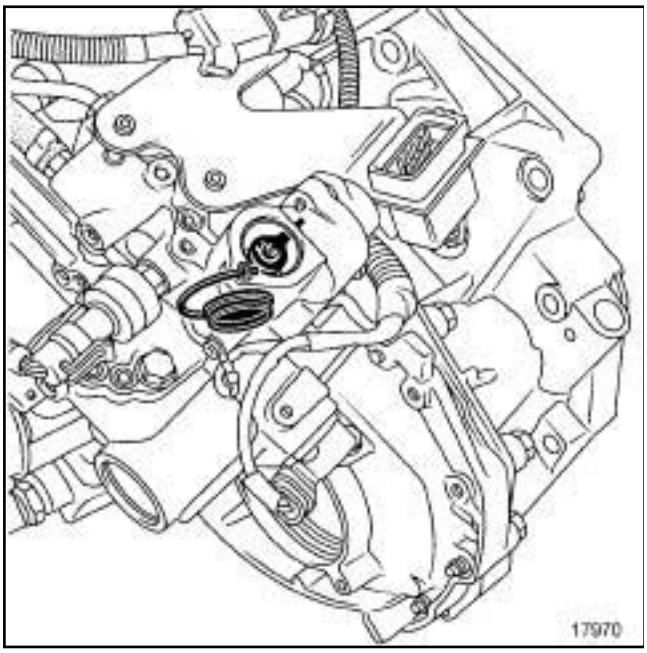
17972

❏ Check that the half-moons are correctly positioned.

❏ Coat the half-moons and the sequential gearbox selector shaft with **SILICONE GREASE** (see **Vehicle: Parts and consumables for the repair**) (MR 411, 04B, Consumables - Products).

D4F, and JH1

❏ It is essential to replace the electro-hydraulic unit seal.



17970

❏ Place the actuator module selector shaft in a raised and locked position.

II - REFITTING OPERATION FOR PART CONCERNED

❏ Fit:

- the new electro-hydraulic unit seal,
- the electro-hydraulic unit.

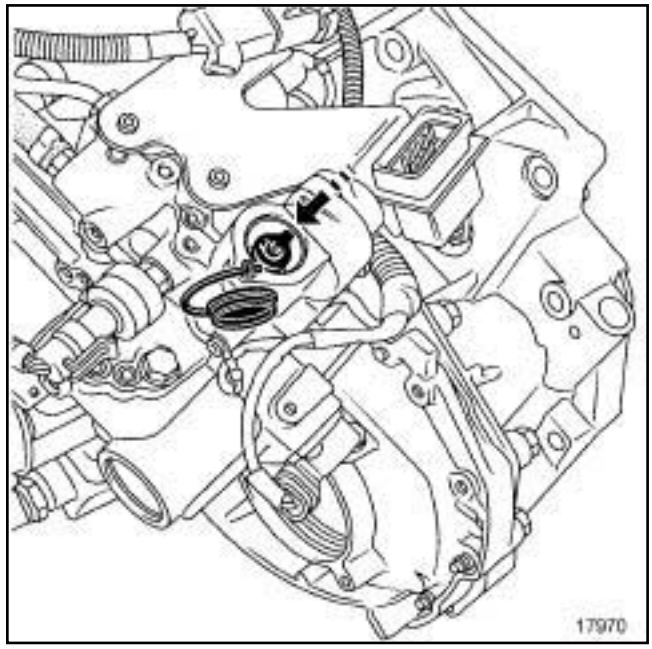
❏ Refit:

- the sequential gearbox lifting eye on the sequential gearbox,
- the breather pipe on the sequential gearbox.
- the electro-hydraulic unit nuts,
- the electro-hydraulic unit bolts.

❏ Connect the sequential gearbox speed sensor connector.

❏ Attach the breather pipe:

- to the cooling hose,
- to the sequential gearbox lifting eye.



17970

❏ Press on the selector shaft with a screwdriver to clip the sequential gearbox selector shaft to the actuator module.

❏ Refit the clutch stay cable to the clutch fork.

❏ Connect the electro-hydraulic unit connector by moving the lock.

III - FINAL OPERATION

❏ Refit:

- the selector shaft cover,
- the selector shaft cover bolt.

❏ Fit the left-hand suspended mounting on the body.

❏ Fit the left-hand suspended engine mounting bolts without tightening them.

❏ Torque tighten the **left-hand suspended engine mounting bolts (21 N.m)**.

❏ Raise the sequential gearbox to its original position.

❏ Fit the left-hand suspended engine mounting rubber pad.

❏ Fit the left-hand suspended engine mounting rubber pad bolts without tightening them.

❏ Torque tighten the **left-hand suspended engine mounting rubber pad bolts (62 N.m)**.

❏ Fit the left-hand suspended engine mounting rubber pad nut without tightening it.

❏ Torque tighten the **left-hand suspended engine mounting rubber pad nut (105 N.m)**.

D4F, and JH1

❑ Refit:

- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting).

Refit.

❑ Fit:

- the petrol injection computer support,
- the engine wiring harness on the petrol injection computer mounting.

❑ Refit:

- the petrol injection computer mounting bolts,
- the engine wiring harness nut on the petrol injection computer mounting,
- the petrol injection computer mounting nut.

❑ Clip onto the petrol injection computer mounting:

- the battery wiring harness,
- the petrol injection computer wiring harness,
- the sequential gearbox computer wiring harness,
- the cooling hose.

❑ Refit:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

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

❑ If replacing the electro-hydraulic unit, carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

Special tooling required	
Ms. 583	Pipe clamps.

Equipment required
Diagnostic tool

Tightening torques ▽	
high pressure pipe unions	**14 N.m**

Note:

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

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (21B, Sequential gearbox).

The electro-hydraulic unit comprises the pump assembly and the actuator module.

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

❏ Remove:

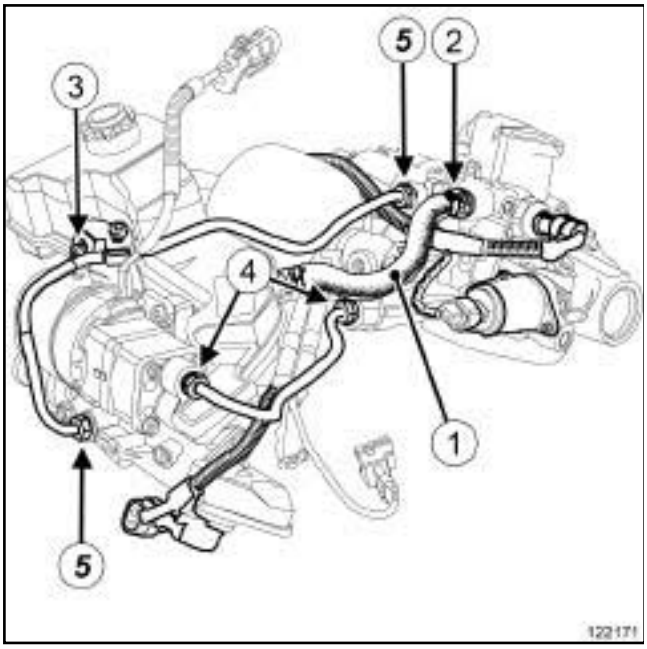
- the battery (see **Battery: Removal - Refitting**) (80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- 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 electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Disconnect the supply connector from the pump assembly pump.

❏ Detach the pump assembly pump supply connector from the electro-hydraulic unit connector mounting.

D4F, and JH1



122171

❏ Position the **(Ms. 583)** on the reservoir low pressure return hose (**1**) .

❏ Remove the clip (**2**) from the reservoir return hose.

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

❏ Disconnect the reservoir low pressure return hose (**1**) from the actuator module.

❏ Remove:

- the clutch stay high pressure supply pipe bracket bolt (**3**) ,
- the actuator module high pressure supply pipe by pressing on the unions (**4**) ,
- the clutch stay high pressure supply pipe by pressing on the unions (**5**) ,
- the pump assembly from the actuator module.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Fit:

- the clutch stay high pressure supply pipe,
- the actuator module high pressure supply pipe.

❏ Fit the high pressure pipe unions, without tightening them.

❏ Connect the reservoir low pressure return hose to the actuator module.

❏ Refit the reservoir return hose clip on the actuator module.

❏ Remove the **(Ms. 583)** from the reservoir low pressure return hose.

❏ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.

❏ Connect the pump assembly supply connector.

II - FINAL OPERATION

❏ Refit the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) .

❏ Torque tighten the **high pressure pipe unions (14 N.m)**.

❏ Refit:

- the clutch stay high pressure supply pipe bracket bolt,
- 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 rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (19D, Engine mounting),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (80A, Battery).

❏ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

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

D4F, and JH1

❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (21B, Sequential gearbox).

D4F, and JH1

Special tooling required	
Mot. 1390	Support for removal - refitting of engine - gearbox assembly

Equipment required
Diagnostic tool

Tightening torques ▽	
left-hand suspended engine mounting bolts	**21 N.m**
left-hand suspended engine mounting rubber pad bolts	**62 N.m**
left-hand suspended engine mounting rubber pad nut	**105 N.m**

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

REMOVAL

I - REMOVAL PREPARATION OPERATION

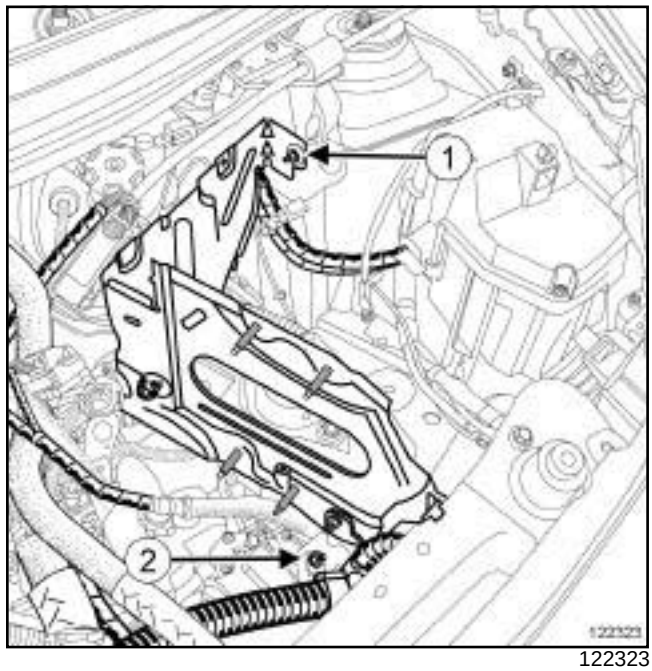
❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❑ Remove:

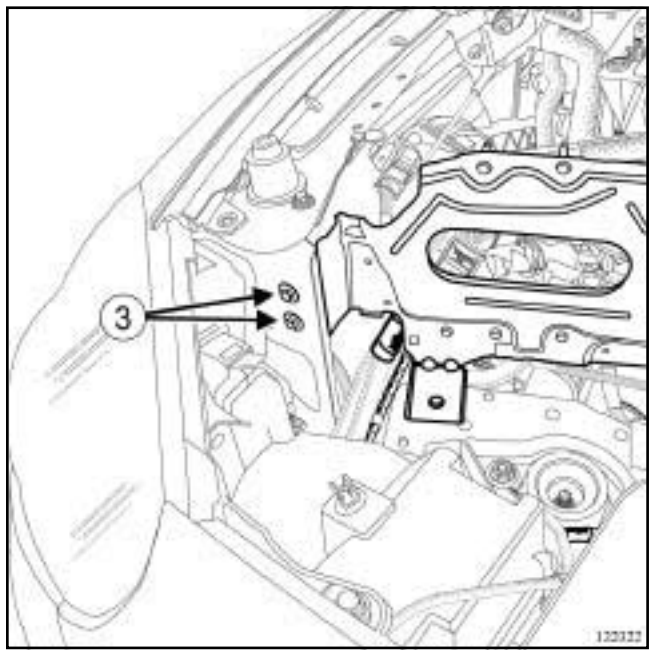
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

❑ Detach from the petrol injection computer mounting:

- the cooling hose,
- the sequential gearbox computer wiring harness,
- the petrol injection computer wiring harness,
- the battery wiring harness.



122323



122322

❑ Remove:

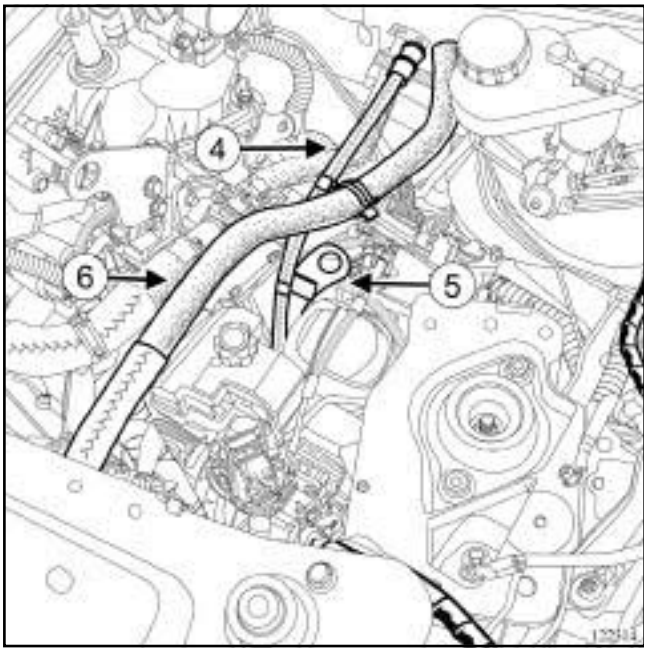
- the petrol injection computer mounting nut (**1**) ,

- the engine wiring harness nut (**2**) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (**3**) .

❏ Remove the engine wiring harness from the petrol injection computer mounting.

❏ Remove the petrol injection computer mounting.

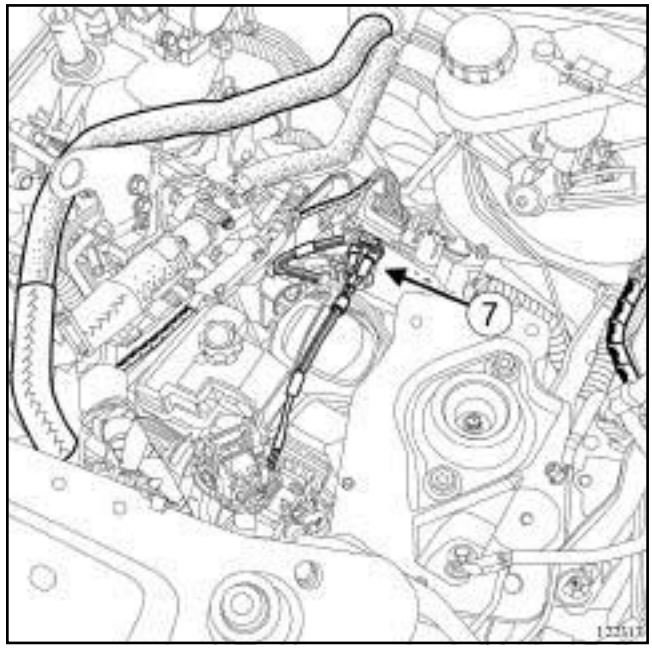
1 - Removing engagement solenoid valve 1, selection solenoid valve 3 and selection solenoid valve 4



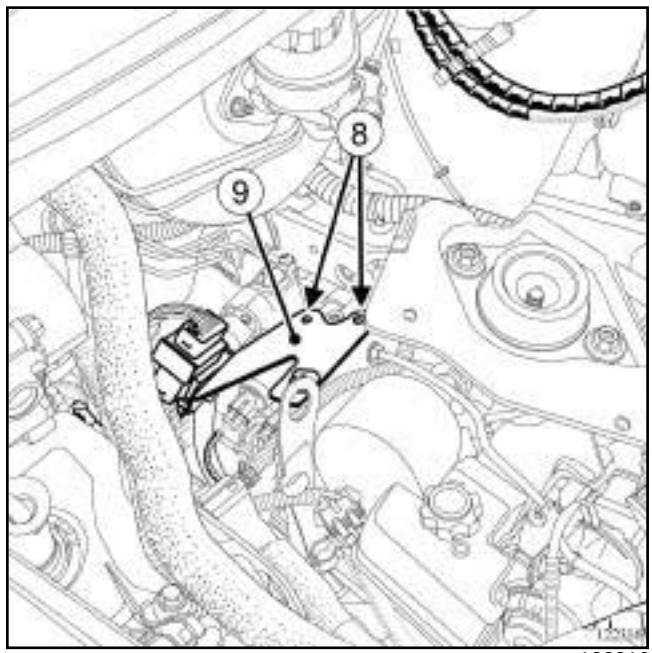
122314

❏ Detach the breather pipe (**4**) :
- from the sequential gearbox lifting eye (**5**) ,
- from the cooling hose (**6**) .

❏ Remove:
- the breather pipe (**4**) from the sequential gearbox,
- the lifting eye nut (**5**) from the sequential gearbox,
- the lifting eye (**5**) from the sequential gearbox.



122313



122316

❏ Remove the cooling hose.

❏ Disconnect the pump assembly supply connector (**7**) .

❏ Detach the pump assembly pump supply connector from the electro-hydraulic unit connector mounting.

❏ Remove the bolts (**8**) from the electro-hydraulic unit connector mounting (**9**) .

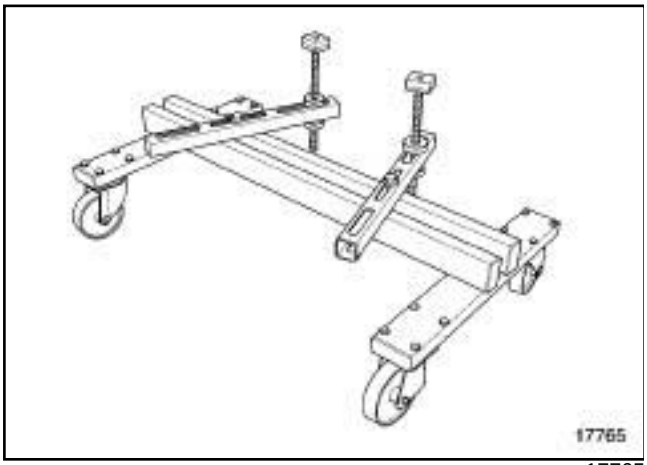
❏ Remove the electro-hydraulic unit connector mounting (**9**) .

D4F, and JH1

2 - Removing engagement solenoid valve 2

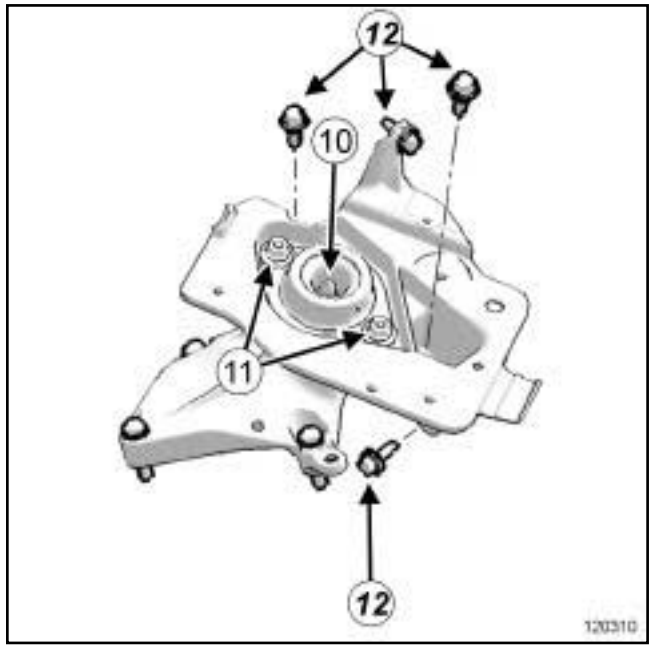
❑ Remove:

- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting).



17765

❑ Support the sequential gearbox on the **(Mot. 1390)**.



120310

❑ Mark the positions:

- of the left-hand suspended engine mounting on the body,
- of the rubber pad on the left-hand suspended engine mounting.

❑ Remove:

- the left-hand suspended engine mounting rubber pad nut (**10**) ,
- the left-hand suspended engine mounting rubber pad bolts (**11**) ,
- the rubber pad from the left-hand suspended engine mounting

❑ Lower the sequential gearbox to access the left-hand suspended engine mounting bolt on the body.

❑ Remove:

- the left-hand suspended engine mounting bolts (**12**) ,
- the left-hand suspended engine mounting.

II - OPERATION FOR REMOVAL OF PART CONCERNED

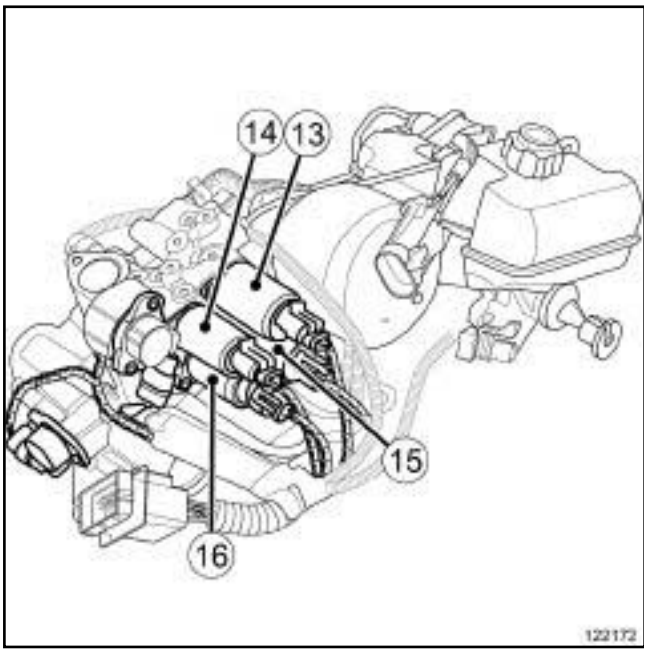
❑

Note:

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

D4F, and JH1

1 - Removing engagement solenoid valve 1, selection solenoid valve 3 and selection solenoid valve 4



122172

❑

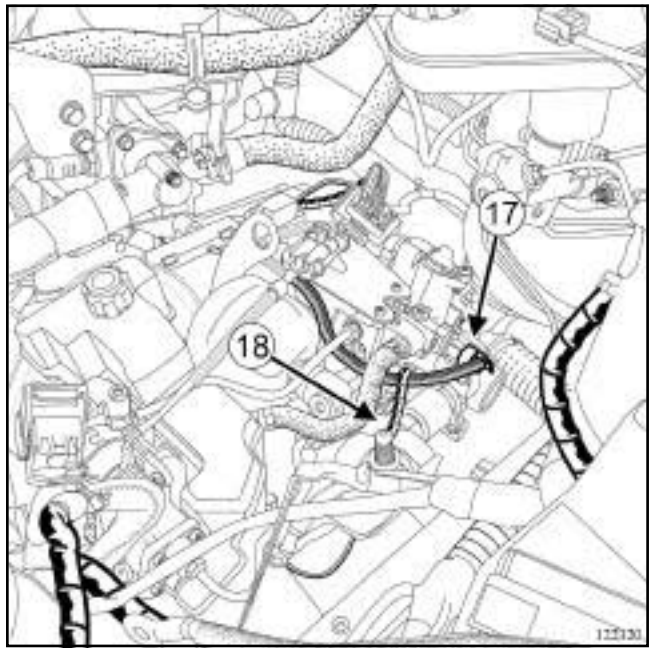
Note:

Prepare for oil to flow out of the electro-hydraulic unit.

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

- the clutch solenoid valve (**13**) ,
- selection solenoid valve 4 (**14**) ,
- selection solenoid valve 3 (**15**) ,
- engagement solenoid valve 1 (**16**) .

2 - Removing engagement solenoid valve 2



122320

❑ Disconnect the following connectors :

- (**17**) from the solenoid valve unit pressure sensor,
- (**18**) from engagement solenoid valve 2.

❑ Remove the actuator module wiring harness.

D4F, and JH1

122319

❑

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

❑ Remove:

- the bolts (**19**) from engagement solenoid valve 2,
- engagement solenoid valve 2.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ It is essential to replace the engagement or clutch solenoid valve seal.

II - REFITTING OPERATION FOR PART CONCERNED

1 - Refitting engagement solenoid valve 1, selection solenoid valve 3 and selection solenoid valve 4

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

- engagement solenoid valve 1 fitted with its new seal,
- selection solenoid valve 3,
- selection solenoid valve 4,
- the clutch solenoid valve fitted with its new seal.

2 - Refitting engagement solenoid valve 2

❑ Refit:

- engagement solenoid valve 2 fitted with its new seal,
- engagement solenoid valve 2 bolts.

❑ Connect the connectors:

- to engagement solenoid valve 2,
- to the solenoid valve unit pressure sensor.

III - FINAL OPERATION

1 - Refitting engagement solenoid valve 1, selection solenoid valve 3 and selection solenoid valve 4

❑ Fit the electro-hydraulic unit connector mounting.

❑ Refit the electro-hydraulic unit connector mounting bolts.

❑ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.

❑ Connect the pump assembly supply connector.

❑ Refit:

- the sequential gearbox lifting eye on the sequential gearbox,
- the sequential gearbox lifting eye nut,
- the breather pipe on the sequential gearbox.

❑ Attach the breather pipe:

- to the cooling hose,
- to the sequential gearbox lifting eye.

2 - Refitting engagement solenoid valve 2

❑ Fit the left-hand suspended engine mounting to the body.

❑ Fit the left-hand suspended engine mounting bolts without tightening them.

❑ Torque tighten the **left-hand suspended engine mounting bolts (21 N.m)**.

❑ Raise the sequential gearbox to its original position.

❑ Fit the left-hand suspended engine mounting rubber pad.

❑ Fit the left-hand suspended engine mounting rubber pad bolts without tightening them.

❑ Torque tighten the **left-hand suspended engine mounting rubber pad bolts (62 N.m)**.

D4F, and JH1

❏ Fit the left-hand suspended engine mounting rubber pad nut without tightening it.

❏ Torque tighten the **left-hand suspended engine mounting rubber pad nut (105 N.m)**.

❏ Refit:

- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres).

3 - Refitting all solenoid valves

❏ Fit:

- the petrol injection computer support,
- the engine wiring harness on the petrol injection computer mounting.

❏ Refit:

- the petrol injection computer mounting bolts,
- the engine wiring harness nut on the petrol injection computer mounting,
- the petrol injection computer mounting nut.

❏ Clip onto the petrol injection computer mounting:

- the battery wiring harness,
- the petrol injection computer wiring harness,
- the sequential gearbox computer wiring harness,
- the cooling hose.

❏ Refit:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❏ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

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

❏ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

Equipment required
Diagnostic tool

IMPORTANT
Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

IMPORTANT
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

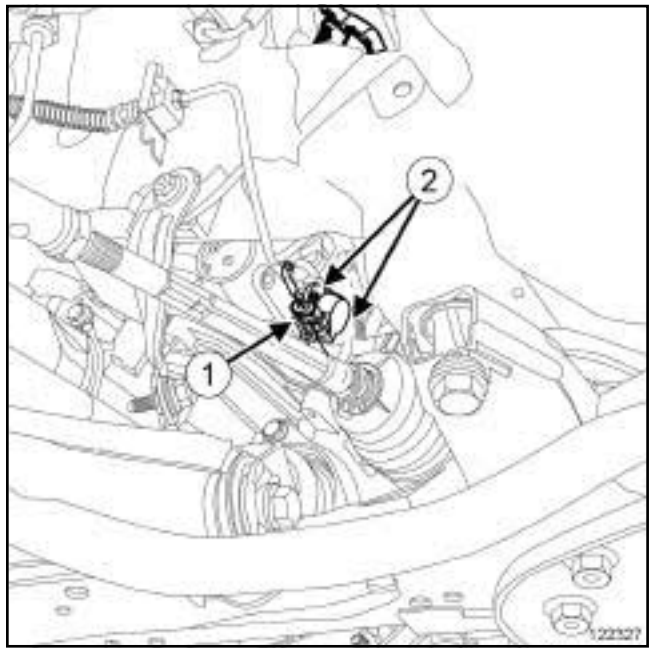
REMOVAL

I - REMOVAL PREPARATION OPERATION

❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❑ Remove the front left-hand wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres).

II - OPERATION FOR REMOVAL OF PART CONCERNED



122327

❑ Disconnect the engagement sensor connector (**1**) .

❑ Remove:

- the engagement sensor bolts (**2**) ,
- the engagement sensor.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Refit:

- the engagement sensor,
- the engagement sensor bolts.

❑ Connect the engagement sensor connector.

II - FINAL OPERATION.

❑ Refit the front left-hand wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres).

❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

Special tooling required	
Ms. 583	Pipe clamps.

Equipment required
Diagnostic tool

Tightening torques ▽	
high pressure pipe unions	**14 N.m**

IMPORTANT
Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

IMPORTANT
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

Note:
To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

The electro-hydraulic unit comprises the pump assembly and the actuator module.

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Remove:

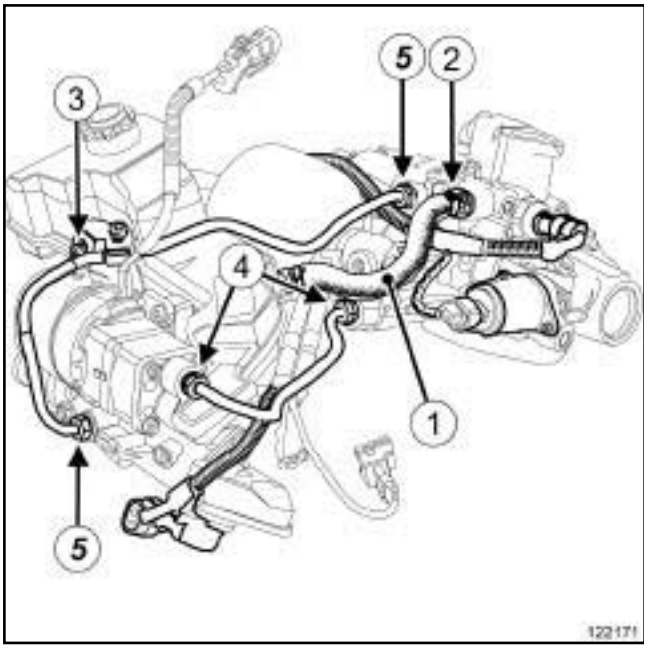
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the front wheels (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) ,
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (MR 411, 31A, Front axle components).

II - OPERATION FOR REMOVAL OF PART CONCERNED

❏ Disconnect the supply connector from the pump assembly pump.

❏ Detach the pump assembly pump supply connector from the electro-hydraulic unit connector mounting.

D4F, and JH1



122171

❑ Position the **(Ms. 583)** on the reservoir low pressure return hose (**1**) .

❑ Remove the clip (**2**) from the reservoir return hose.

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

❑ Disconnect the reservoir low pressure return hose (**1**) from the actuator module.

Note:

Prepare for oil to flow out of the electro-hydraulic unit.

❑ Remove:

- the clutch stay high pressure supply pipe bracket bolt (**3**) ,
- the actuator module high pressure supply pipe by pressing on the unions (**4**) ,
- the clutch stay high pressure supply pipe by pressing on the unions (**5**) ,
- the actuator module from the pump assembly.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Fit:

- the clutch stay high pressure supply pipe,
- the actuator module high pressure supply pipe.

❑ Fit the high pressure pipe unions, without tightening them.

❑ Connect the reservoir low pressure return hose to the actuator module.

❑ Refit the reservoir return hose clip on the actuator module.

❑ Remove the **(Ms. 583)** from the reservoir low pressure return hose.

❑ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.

❑ Connect the pump assembly supply connector.

II - FINAL OPERATION

❑ Refit the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) .

❑ Torque tighten the **high pressure pipe unions (14 N.m)**.

❑ Refit:

- the clutch stay high pressure supply pipe bracket bolt,
- the front axle subframe (see **Front axle subframe: Removal - Refitting**) (MR 411, 31A, Front axle components),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheels (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),

D4F, and JH1

- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),

❑ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

WARNING

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

❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

Equipment required
Diagnostic tool

IMPORTANT
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

❑ Engage first gear

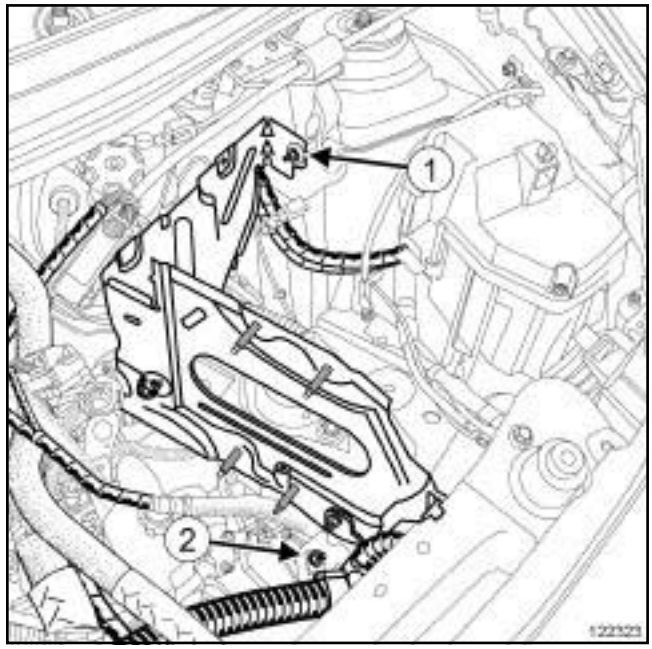
WARNING
To remove the gear selection sensor it is essential that you shift to first gear before removal.

❑ Remove:

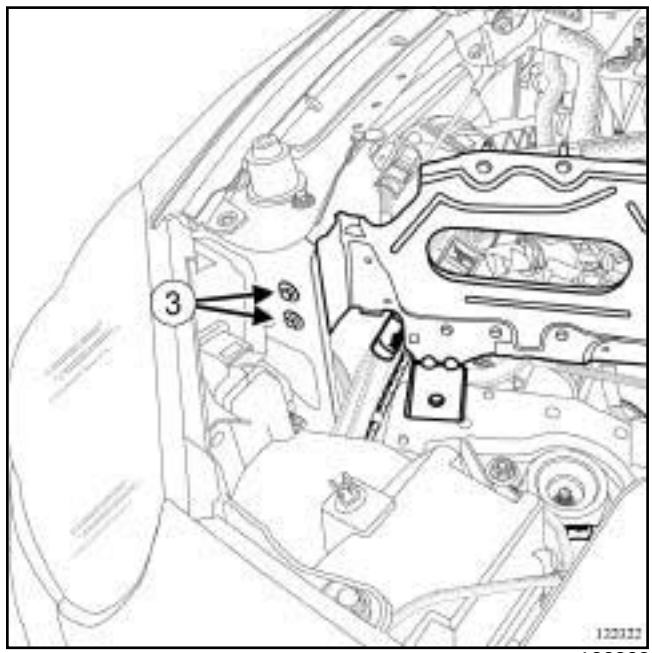
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

❑ Detach from the petrol injection computer mounting:

- the cooling hose,
- the sequential gearbox computer wiring harness,
- the petrol injection computer wiring harness,
- the battery wiring harness.



122323



122322

❑ Remove:

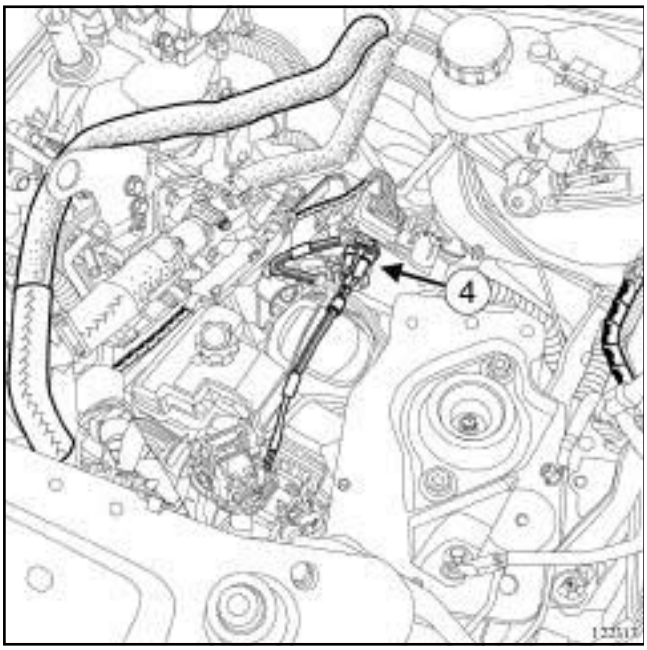
- the petrol injection computer mounting nut (**1**) ,
- the engine wiring harness nut (**2**) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (**3**) .

❑ Remove the engine wiring harness from the petrol injection computer mounting.

❑ Remove the petrol injection computer mounting.

D4F, and JH1

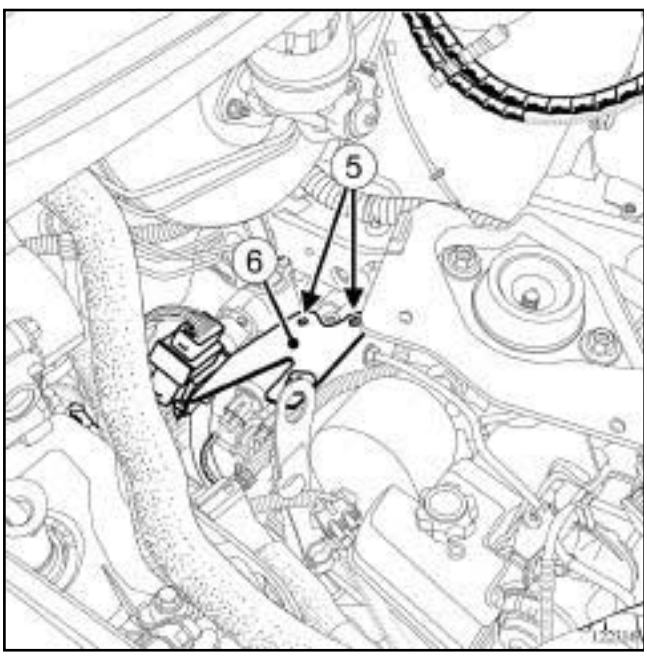
II - OPERATION FOR REMOVAL OF PART CONCERNED



122313

❏ Disconnect the pump assembly supply connector (**4**) .

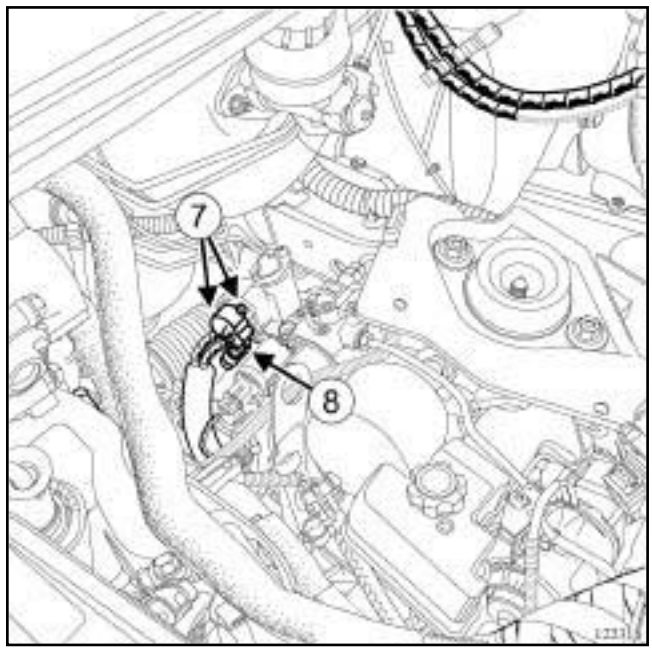
❏ Unclip the pump assembly supply connector (**4**) from the electro-hydraulic unit connector mounting.



122316

❏ Remove the bolts (**5**) from the electro-hydraulic unit connector mounting (**6**) .

❏ Remove the electro-hydraulic unit connector mounting (**6**) .



122318

❏ Remove the gear selection sensor bolts (**7**) .

❏ Remove the gear selection sensor from its housing.

❏ Disconnect the gear selection sensor connector (**8**) .

❏ Remove the gear selection sensor.

REFITTING

I - REFITTING PREPARATIONS OPERATION

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

II - REFITTING OPERATION FOR PART CONCERNED

❏ Connect the gear selection sensor connector.

❏ Position the gear selection sensor.

❏ Refit the gear selection sensor bolts.

❏ Refit:

- the electro-hydraulic unit connector mounting,
- the electro-hydraulic unit connector mounting bolts.

❏ Clip the pump assembly supply connector onto the electro-hydraulic unit connector mounting.

❏ Connect the pump assembly supply connector.

III - FINAL OPERATION.

❏ Fit:

- the petrol injection computer support,

D4F, and JH1

- the engine wiring harness on the petrol injection computer mounting.

❏ Refit:

- the petrol injection computer mounting bolts,
- the engine wiring harness nut on the petrol injection computer mounting,
- the petrol injection computer mounting nut.

❏ Clip onto the petrol injection computer mounting:

- the battery wiring harness,
- the petrol injection computer wiring harness,
- the sequential gearbox computer wiring harness,
- the cooling hose.

❏ Refit:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),

❏ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

Equipment required
Diagnostic tool

IMPORTANT
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

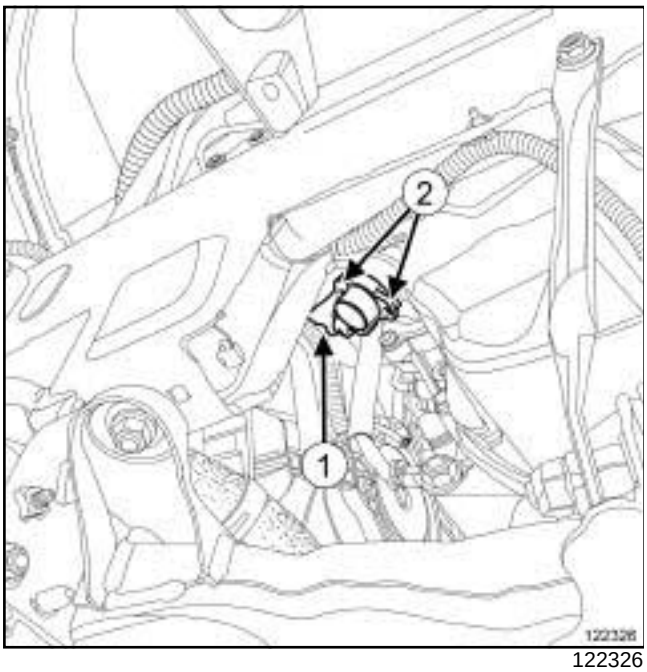
IMPORTANT
Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



122326

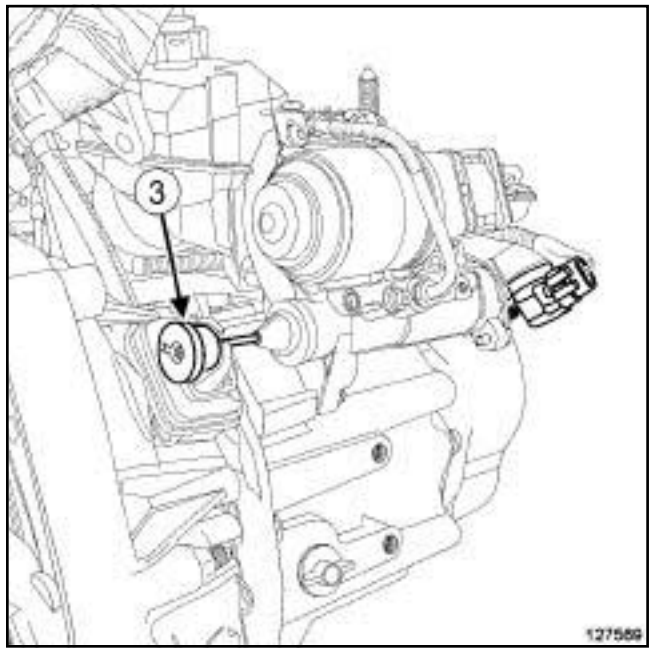
❏ Disconnect the clutch position sensor connector (**1**) .

❏ Remove:

- the clutch position sensor bolts (**2**) ,
- the clutch position sensor.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED



127569

❏

Note:
The clutch cable (**3**) must be in place on the fork, i.e. out of the cylinder casing.

❏ Position the clutch position sensor on the cylinder control shaft.

❏ Pivot the clutch position sensor clockwise until the holes of the sensor are opposite the mounting holes.

❏ Tighten the clutch position sensor bolts.

❏ Connect the clutch position sensor connector.

II - FINAL OPERATION.

❏ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (21B, Sequential gearbox).

D4F, and JH1

D4F, and JH1

Equipment required
Diagnostic tool

IMPORTANT

Before carrying out any operation on the sequential system, discharge the accumulator using the diagnostic tool.

IMPORTANT

Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

Note:

To discharge the accumulator and deactivate the pump assembly pump, (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

REMOVAL

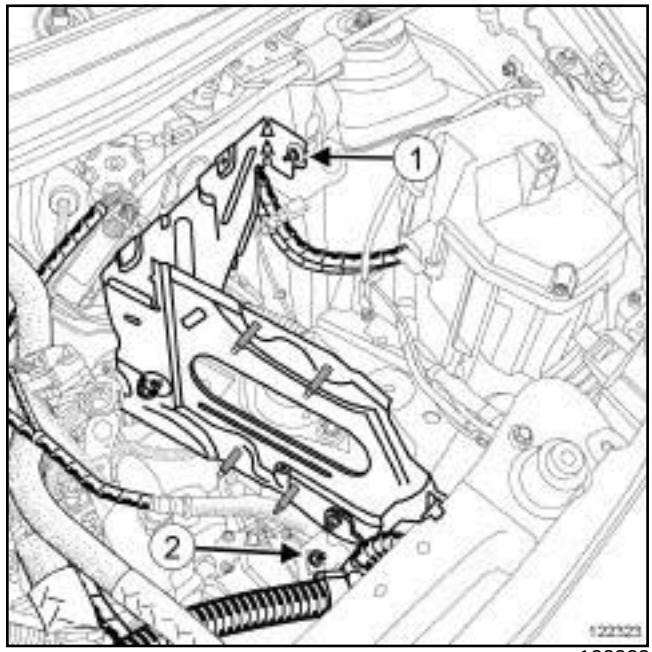
I - REMOVAL PREPARATION OPERATION

❑ Remove:

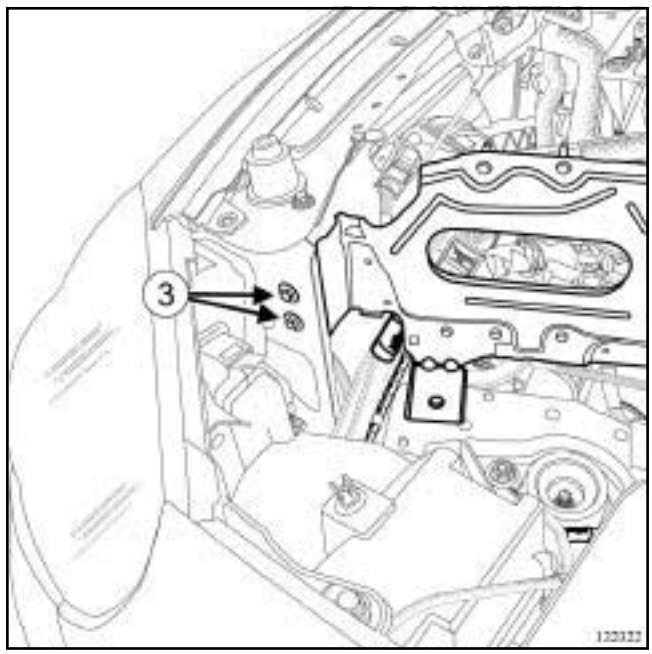
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection).

❑ Unclip:

- the cooling hose from the petrol injection computer mounting,
- the sequential gearbox computer wiring harness from the petrol injection computer mounting,
- the petrol injection computer wiring harness from the petrol injection computer mounting,
- the battery wiring harness from the petrol injection computer mounting.



122323



122322

❑ Remove:

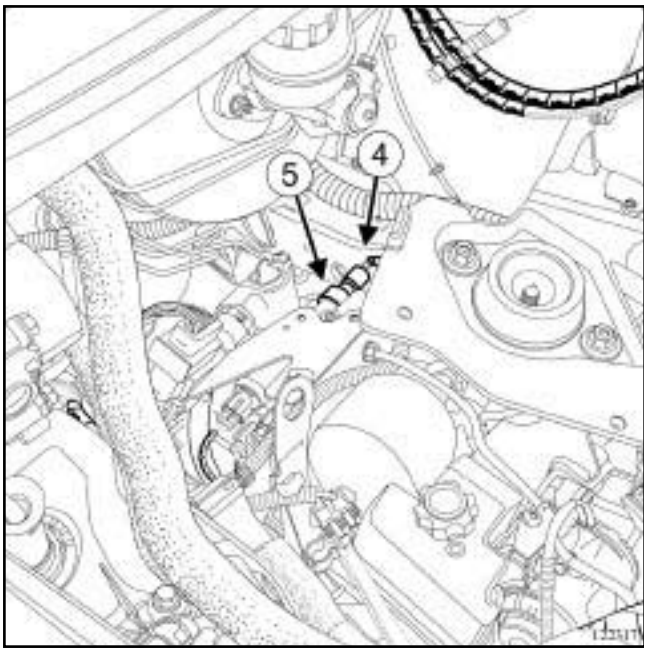
- the petrol injection computer mounting nut (**1**) ,
- the engine wiring harness nut (**2**) from the petrol injection computer mounting,
- the petrol injection computer mounting bolts (**3**) .

❑ Remove the engine wiring harness from the petrol injection computer mounting.

❑ Remove the petrol injection computer mounting.

D4F, and JH1

II - OPERATION FOR REMOVAL OF PART CONCERNED



122317

❑ Disconnect the connector (**4**) from the solenoid valve unit pressure sensor.

> Note:
>
> Prepare for oil to flow out of the electro-hydraulic unit.

❑ Remove the solenoid valve unit pressure sensor (**5**) .

REFITTING

I - REFITTING PREPARATION OPERATION

❑ It is essential to replace the solenoid valve unit pressure sensor seal.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Refit the solenoid valve unit pressure sensor.

❑ Connect the solenoid valve unit pressure sensor connector.

III - FINAL OPERATION

❑ Fit:

- the petrol injection computer support,
- the engine wiring harness on the petrol injection computer mounting.

❑ Refit:

- the petrol injection computer mounting bolts,
- the engine wiring harness nut on the petrol injection computer mounting,
- the petrol injection computer mounting nut.

❑ Clip:

- the battery wiring harness to the petrol injection computer mounting,
- the petrol injection computer wiring harness to the petrol injection computer mounting,
- the sequential gearbox computer wiring harness to the petrol injection computer mounting,
- the cooling hose to the petrol injection computer mounting.

❑ Refit:

- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑ Fill the electric pump assembly reservoir with oil (see **Sequential gearbox oil: Specifications**) (Technical Note 6012, 04A, Lubricants) to between **32 and 38 mm** above the **MIN** mark.

> **WARNING**
>
> After the accumulator has been fully filled (15 seconds after the ignition has been switched on): the oil level is at the MINIMUM mark.

❑ Carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

Tightening torques ▽	
left-hand suspended engine mounting shaft bolts	62 Nm

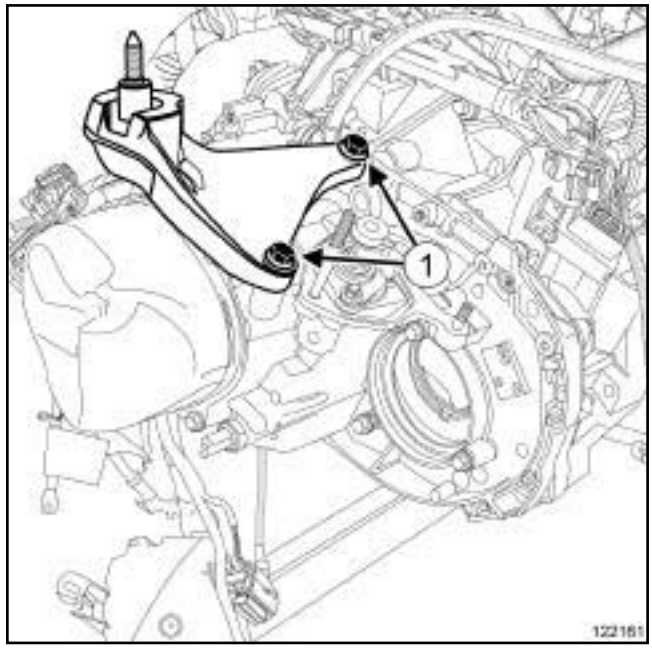
REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Remove:

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) .

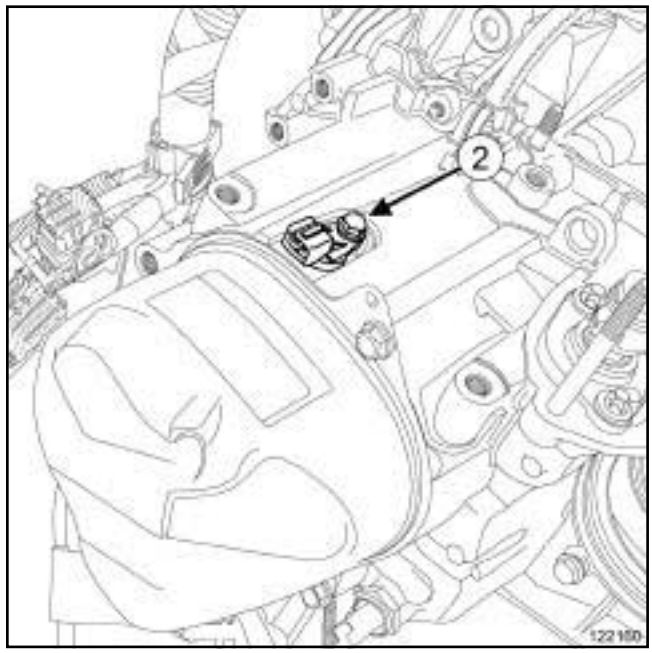


122161

❏ Remove:

- the left-hand suspended engine mounting shaft bolts (**1**) ,
- the left-hand suspended engine mounting shaft.

II - OPERATION FOR REMOVAL OF PART CONCERNED



122160

❏ Remove:

- the sequential gearbox engine speed sensor bolt (**2**) ,
- the sequential gearbox engine speed sensor.

D4F, and JH1

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the sequential gearbox engine speed sensor,
- the sequential gearbox engine speed sensor bolt.

II - FINAL OPERATION

❏ Fit the left-hand suspended engine mounting shaft onto the sequential gearbox.

❏ Fit the left-hand suspended engine mounting shaft bolts without tightening them.

❏ Torque tighten the **left-hand suspended engine mounting shaft bolts (62 Nm)**.

❏ Refit:

- the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) ,
- the front left-hand wheel arch liner (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the left-hand front wheel (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the rear suspended engine mounting (see **Lower engine tie-bar: Removal - Refitting**) (MR 411, 19D, Engine mounting),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

D4F, and JH1

Special tooling required	
Mot. 1448	Remote operation pliers for hose clips.

Equipment required
workshop hoist
load balancer
roller-type stud removal tool

Tightening torques ▽	
sequential gearbox studs	**7 Nm**
sequential gearbox bolts	**44 Nm**
sequential gearbox nuts	**44 Nm**
flywheel protection plate bolts (18)	**44 Nm**

IMPORTANT
Consult the safety and cleanliness advice and operation recommendations before carrying out any repair (see **21B**, **Sequential gearbox**, **Sequential gearbox: Precautions for the repair**, page **21B-1**) .

REMOVAL

I - REMOVAL PREPARATION OPERATION

❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (MR 411, 02A, Lifting equipment).

❏ Remove:

- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
- the front wheels (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the catalytic converter (see **Catalytic converter: Removal - Refitting**) ,
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front bumper (see **Front bumper: Removal - Refitting**) (MR 412, 55A, Exterior protection).

❏ Drain:

- the cooling system (see **Cooling system: Draining - Refilling**) (MR 411, 19A, Cooling),
- the sequential gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

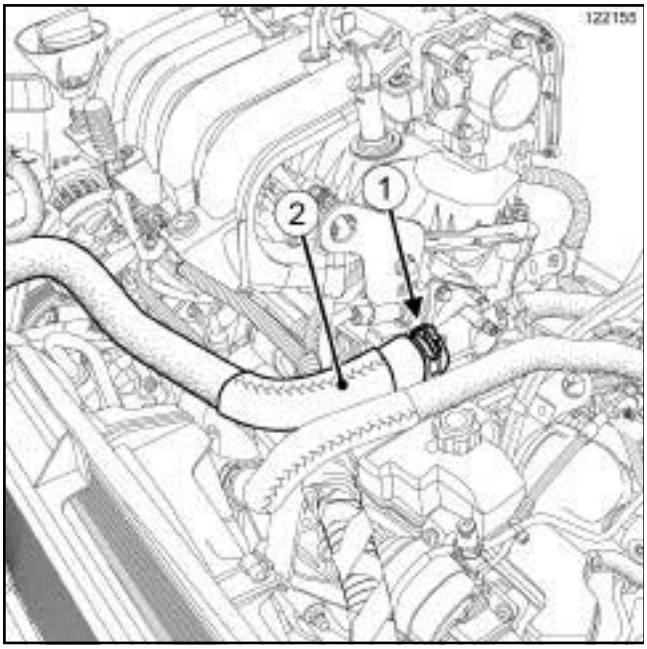
AIR CONDITIONING or CLIMATE CONTROL

❏ Drain the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (MR 411, 62A, Air conditioning).

❏ Remove:

- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (MR 411, 10A, Engine and peripherals),
- the hub-carrier - driveshaft assembly (see) (MR 411, 31A, Front axle components),
- the starter (see **Starter: Removal - Refitting**) (MR 411, 16A, Starting - Charging),
- the crankshaft position sensor (see **Crankshaft position sensor: Removal - Refitting**) (MR 411, 17B, Petrol injection).

D4F, and JH1

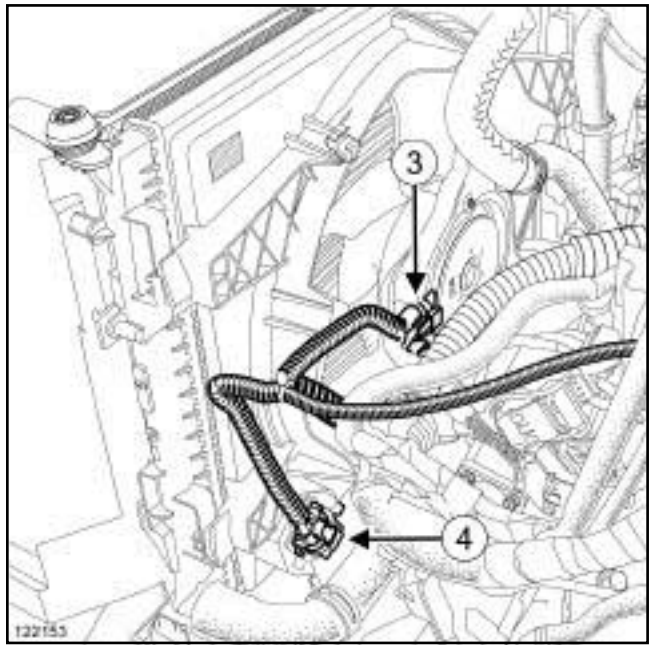


122155

❏ Remove the cooling radiator top hose clip (**1**) using the **(Mot. 1448)**.

WARNING
Prepare for the flow of fluid, and protect the surrounding components.

❏ Disconnect the cooling radiator top hose (**2**) from the water chamber.

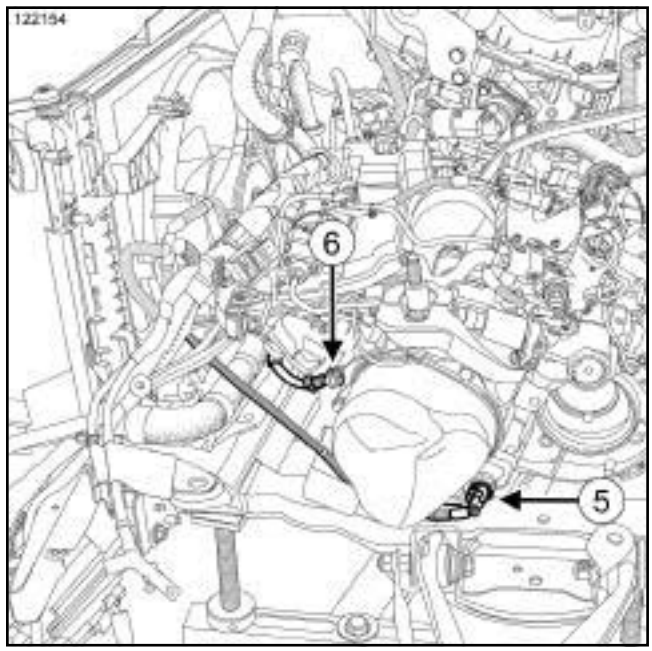


122153

❏ Disconnect:

- the fan assembly connector (**3**) ,
- the resistor unit connector (**4**) from the blower unit.

❏ Unhook the electrical harness from fan assembly.



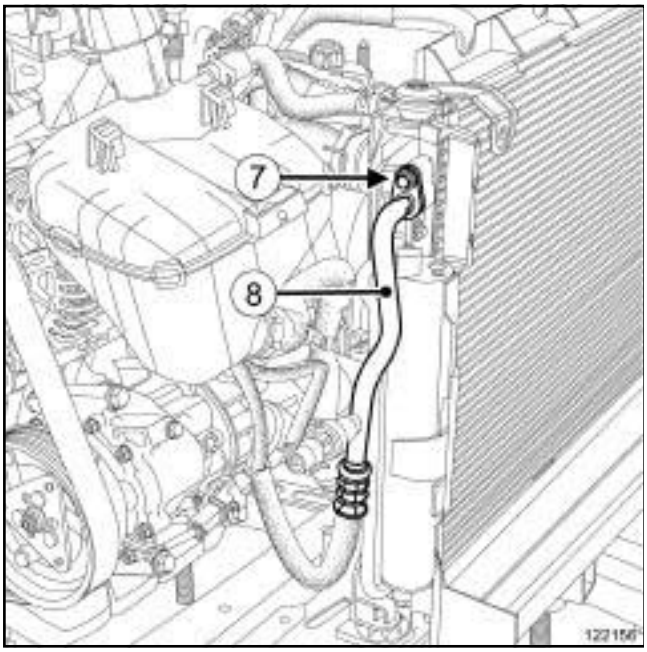
122154

❏ Disconnect the connector (**5**) from the reverse gear switch.

❏ Remove the sequential gearbox earth cable bolt (**6**) .

D4F, and JH1

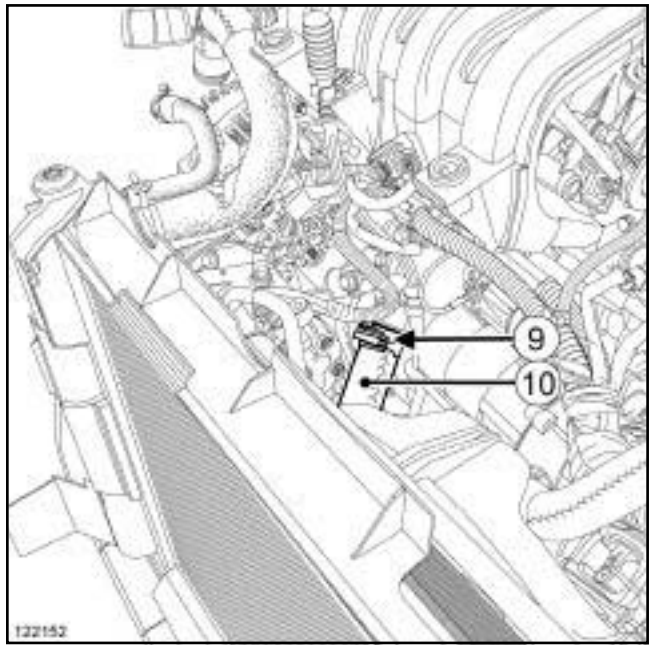
AIR CONDITIONING or CLIMATE CONTROL



122156

❏ Remove:

- the air conditioning condenser inlet pipe bolt (**7**) ,
- the air conditioning condenser inlet pipe (**8**) .



122152

❏ Remove the cooling radiator bottom hose clip (**9**) using the **(Mot. 1448)**.

WARNING
Prepare for the flow of fluid, and protect the surrounding components.

❏ Disconnect the cooling radiator bottom hose (**10**) from the coolant pump inlet pipe.

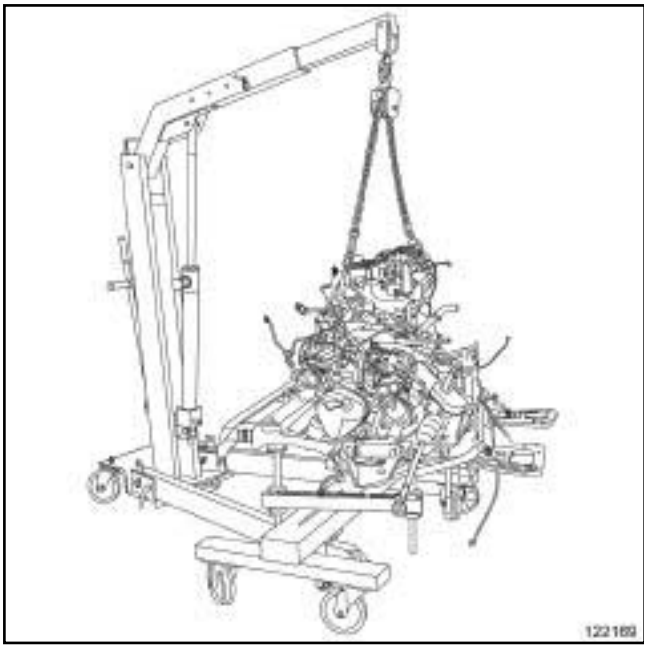
STANDARD HEATING

❏ Remove the « cooling radiator - cooling radiator hose » assembly from the front axle sub-frame.

AIR CONDITIONING or CLIMATE CONTROL

❏ Remove the « cooling radiator - cooling radiator hose - air conditioning condenser » assembly from the front axle sub-frame.

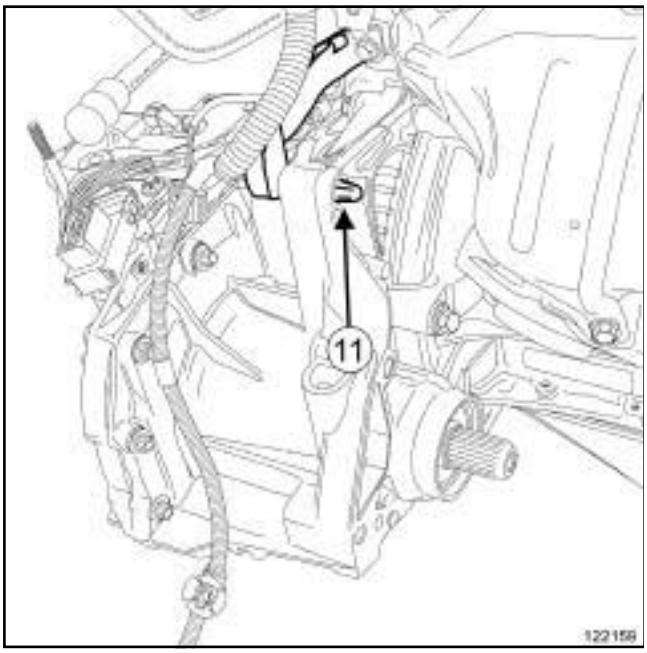
D4F, and JH1


122169

122169

❑ Separate the « engine - sequential gearbox » assembly from the front axle sub-frame using a **workshop hoist** and a **load balancer**.

❑ Remove the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) .



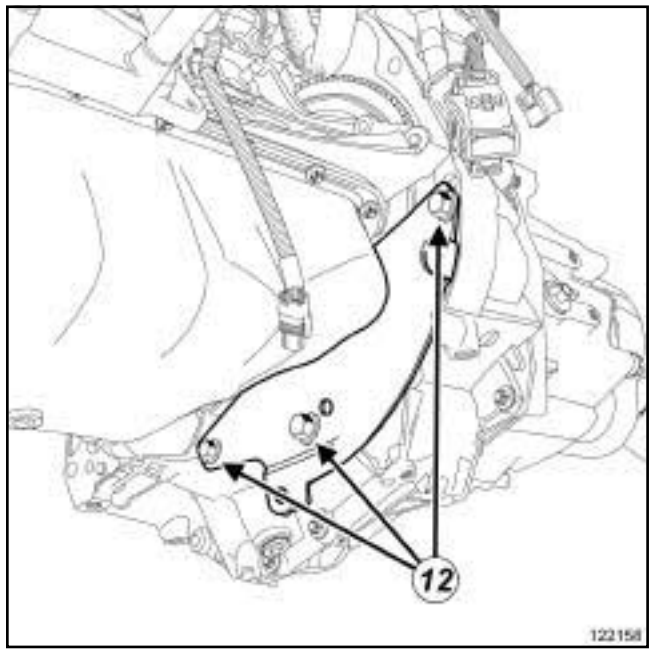
122159

122159

❑ Remove the sequential gearbox engine wiring harness neck by pressing on the clip (**11**) .

❑ Remove the sequential gearbox engine wiring harness neck.

II - OPERATION FOR REMOVAL OF PART CONCERNED



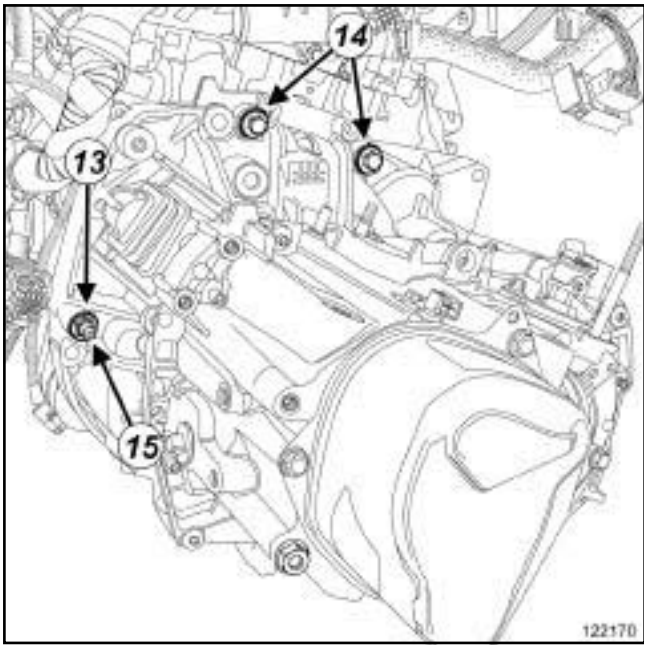
122158

122158

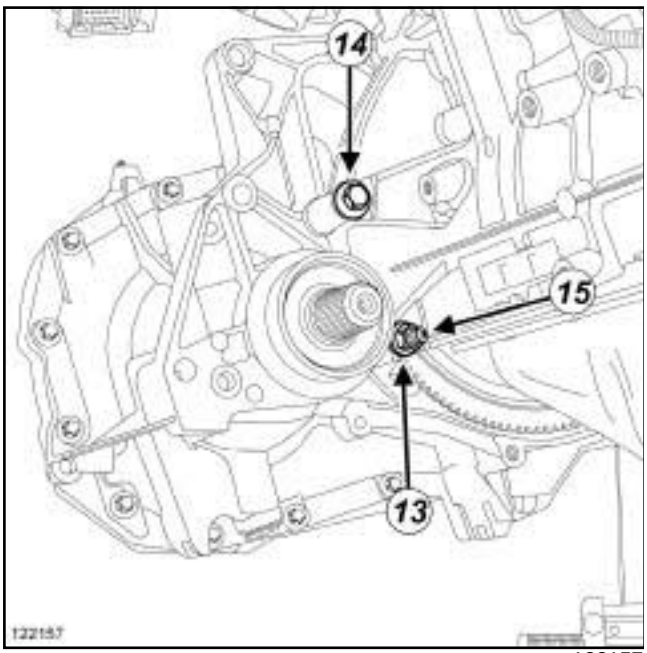
❑ Remove:

- the flywheel protection plate bolts (**12**) ,
- the flywheel protection plate.

D4F, and JH1



122170

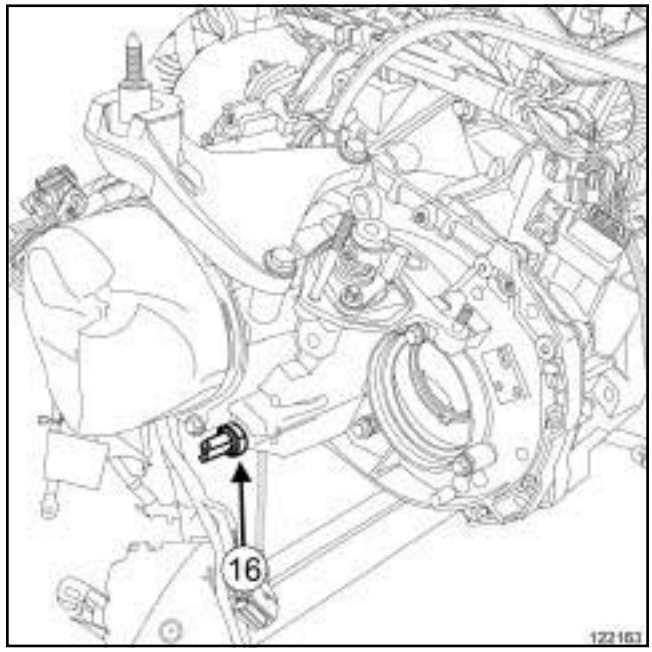


122157

❑ Remove:

- the sequential gearbox nuts (**13**) ,
- the sequential gearbox bolts (**14**) ,
- the sequential gearbox from the engine,
- the sequential gearbox studs (**15**) using a **roller-type stud removal tool**.

If replacing the sequential gearbox



122163

❑ Remove:

- the reverse gear switch (**16**) ,
- the sequential gearbox speed sensor (see **21B**, **Sequential gearbox**, **Sequential gearbox engine speed sensor: Removal - Refitting**, page **21B-38**) .

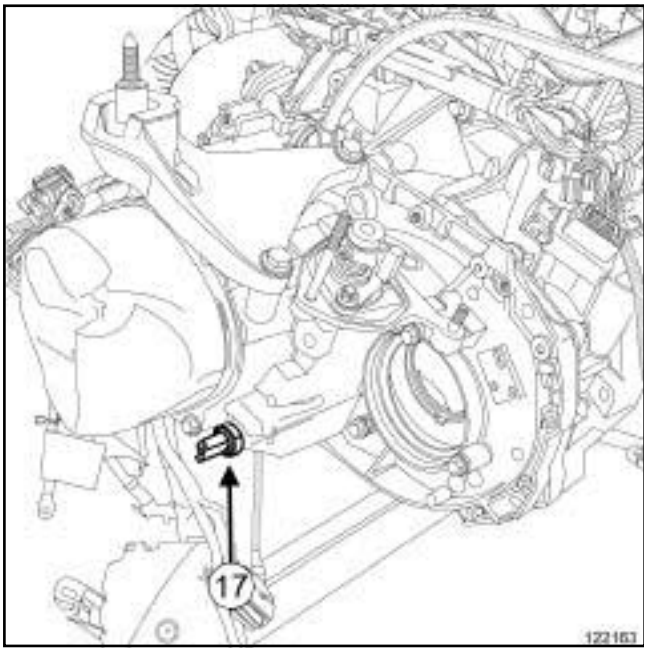
REFITTING

I - REFITTING PREPARATION OPERATION

❑ Check that the centring ring is in place.

D4F, and JH1

If replacing the sequential gearbox



122163

❏ Refit:

- the sequential gearbox engine speed sensor (see **21B**, **Sequential gearbox**, **Sequential gearbox engine speed sensor: Removal - Refitting**, page **21B-38**) ,
- the reverse gear switch (**17**) .

II - REFITTING OPERATION FOR PART CONCERNED

❏ Fit the sequential gearbox to the engine.

❏ Fit the sequential gearbox studs without tightening them.

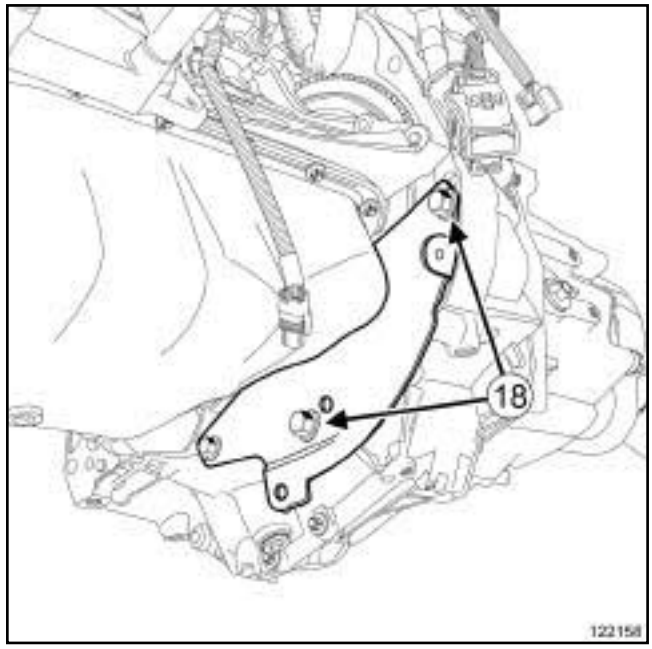
❏ Torque tighten the **sequential gearbox studs (7 Nm)** using a **roller-type stud removal tool**.

❏ Fit without tightening:

- the sequential gearbox bolts,
- the sequential gearbox nuts.

❏ Tighten to torque:

- the **sequential gearbox bolts (44 Nm)**,
- the **sequential gearbox nuts (44 Nm)**.



122158

❏ Refit:

- the flywheel protection plate,
- the flywheel protection plate bolt.

❏ Fit the flywheel protection plate bolts (**18**) without tightening them.

❏ Torque tighten the **flywheel protection plate bolts (18) (44 Nm)**.

III - FINAL OPERATION

❏ Attach the engine wiring harness neck to the sequential gearbox.

❏ Refit the electro-hydraulic unit (see **21B**, **Sequential gearbox**, **Electro-hydraulic unit: Removal - Refitting**, page **21B-11**) .

❏ Fit the « engine - sequential gearbox » assembly to the front axle sub-frame using a **workshop hoist** and a **load balancer** in its original position.

STANDARD HEATING

❏ Refit the « cooling radiator - cooling radiator hose » assembly to the front axle sub-frame.

D4F, and JH1

AIR CONDITIONING or CLIMATE CONTROL

❑ Refit the « cooling radiator - cooling radiator hose - air conditioning condenser » assembly to the front axle sub-frame.

❑ Connect the cooling radiator bottom hose to the coolant pump inlet pipe.

❑ Refit the cooling radiator bottom hose clip using the **(Mot. 1448)**.

AIR CONDITIONING or CLIMATE CONTROL

❑ Refit:

- the air conditioning condenser inlet pipe,
- the air conditioning condenser inlet pipe bolt.

❑ Refit the sequential gearbox earth cable bolt.

❑ Connect the reverse gear switch connector.

❑ Clip the wiring harness to the motor-driven fan assembly.

❑ Connect:

- the motor-driven fan assembly resistor unit connector,
- the motor-driven fan assembly connector.

❑ Connect the cooling radiator top hose to the water chamber.

❑ Refit the cooling radiator top hose clip using the **(Mot. 1448)**.

❑ Refit:

- the engine speed and position sensor (see **Crankshaft position sensor: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the starter (see **Starter: Removal - Refitting**) (MR 411, 16A, Starting - Charging),
- the hub-carrier - driveshaft assembly (see) (MR 411, 31A, Front axle components),
- the engine - gearbox assembly (see **Engine - gearbox assembly: Removal - Refitting**) (MR 411, 10A, Engine and peripherals).

AIR CONDITIONING or CLIMATE CONTROL

❑ Fill the refrigerant circuit (see **Refrigerant circuit: Draining - Filling**) (MR 411, 62A, Air conditioning).

❑ Refill:

- the sequential gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) ,
- the cooling system (see **Cooling system: Draining - Refilling**) (MR 411, 19A, Cooling).

❑ Refit:

- the front bumper (see **Front bumper: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the front wheel arch liners (see **Front wheel arch liner: Removal - Refitting**) (MR 412, 55A, Exterior protection),
- the catalytic converter (see **Catalytic converter: Removal - Refitting**) ,
- the front wheels (see **Wheel: Removal - Refitting**) (MR 411, 35A, Wheels and tyres),
- the air filter unit (see **Air filter unit: Removal - Refitting**) (MR 411, 12A, Fuel mixture),
- the petrol injection computer (see **Petrol injection computer: Removal - Refitting**) (MR 411, 17B, Petrol injection),
- the battery tray (see **Battery tray: Removal - Refitting**) (MR 411, 80A, Battery),
- the sequential gearbox computer (see **21B**, **Sequential gearbox**, **Sequential gearbox converter: Removal - Refitting**, page **21B-47**) ,
- the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

D4F, and JH1

Equipment required
Diagnostic tool

REMOVAL

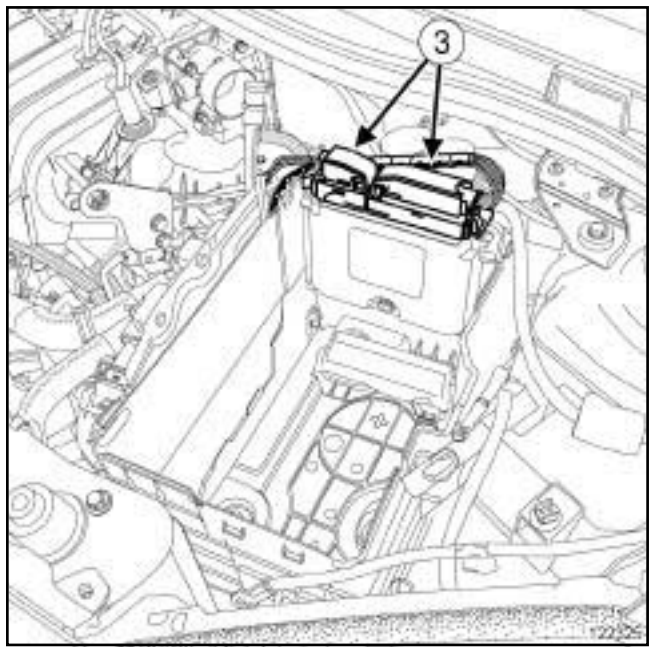
I - REMOVAL PREPARATION OPERATION

❑ Remove the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

II - OPERATION FOR REMOVAL OF PART CONCERNED

122324

❑ Unclip (**1**) the sequential gearbox computer from its mounting (**2**) .



122325

❑ Disconnect the sequential gearbox computer connectors (**3**) by pressing the locks.

❑ Remove the sequential gearbox computer.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Connect the sequential gearbox computer connectors by pressing the locks.

❑ Clip the sequential gearbox computer onto its mounting.

II - FINAL OPERATION

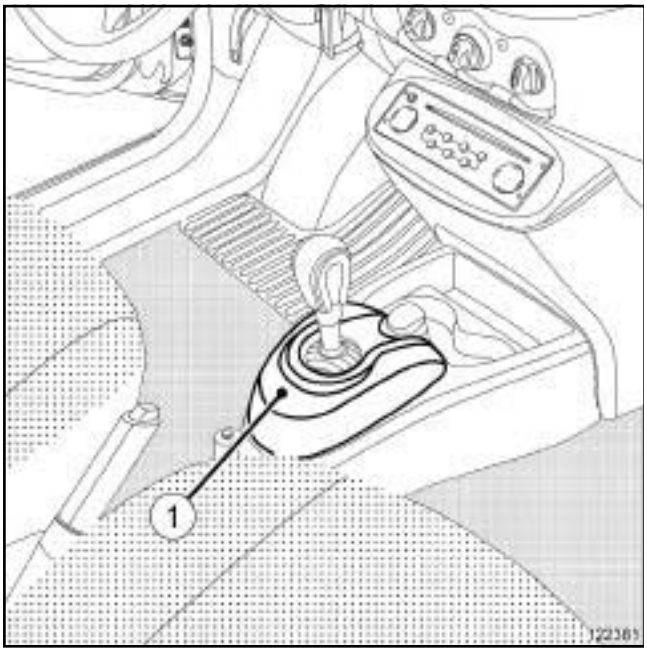
❑ Refit the battery (see **Battery: Removal - Refitting**) (MR 411, 80A, Battery).

❑ If replacing the sequential gearbox computer, carry out the necessary operations using the **Diagnostic tool** (see **Fault finding - Replacement of components**) (MR 413, 21B, Sequential gearbox).

D4F, and JH1

REMOVAL

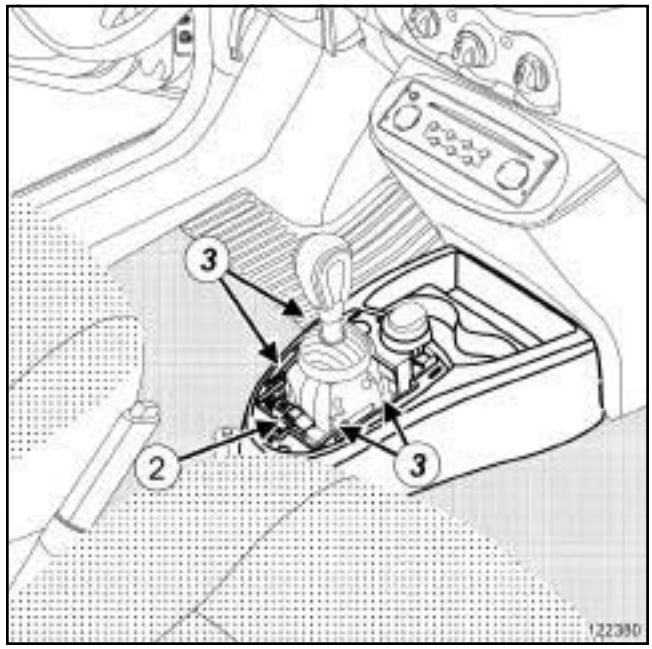
I - REMOVAL PREPARATION OPERATION



122381

❏ Unclip the sequential gearbox gear lever cover (**1**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



122380

❏ Disconnect the sequential gearbox gear lever connector (**2**) .

❏ Detach the sequential gearbox gear lever connector (**2**) .

❏ Remove:

- the sequential gearbox gear lever bolts (**3**) ,

- the sequential gearbox gear lever.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❏ Refit:

- the sequential gearbox gear lever by positioning the wiring harness at the front,

- the sequential gearbox gear lever bolts.

❏ Clip on the sequential gearbox gear lever connector.

❏ Connect the sequential gearbox gear lever connector.

II - FINAL OPERATION.

❏ Clip on the sequential gearbox gear lever cover.

Driveshaft: Precautions for the repair

JB1 or JH1 or JH3 or JR5

WARNING

A gearbox oil leak at the driveshaft may destroy it.

WARNING

Lubricate the base of the bearing with **MOLYKOTE** to prevent the bearing 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 seals whenever the driveshaft is removed.

WARNING

Always replace the left-hand driveshaft lock 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.

JB1 or JH1

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques ▽	
the flange mounting bolts	**21 Nm**
shock absorber base bolts	**105 N.m**
track rod end nut	**37 Nm**
hub nut	**280 N.m**

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**) (02A, Lifting equipment).

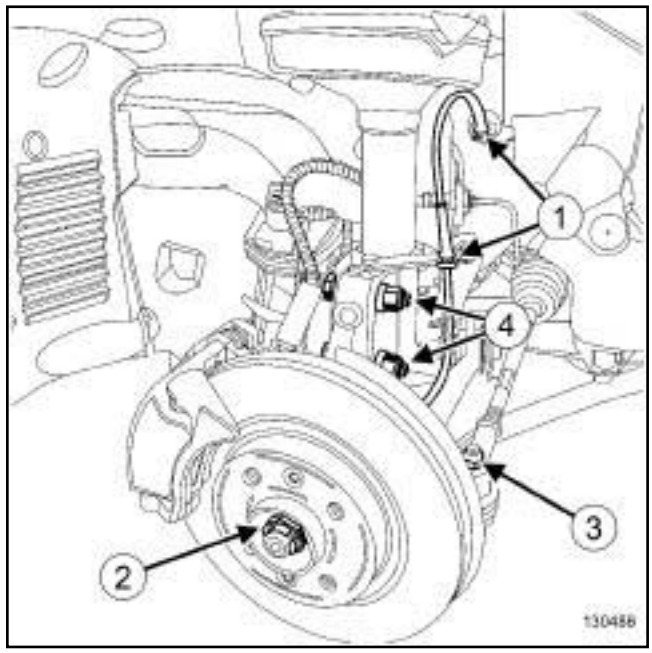
❏ Remove:

- the engine undertray bolts,
- the engine undertray.

❏ Drain the manual gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



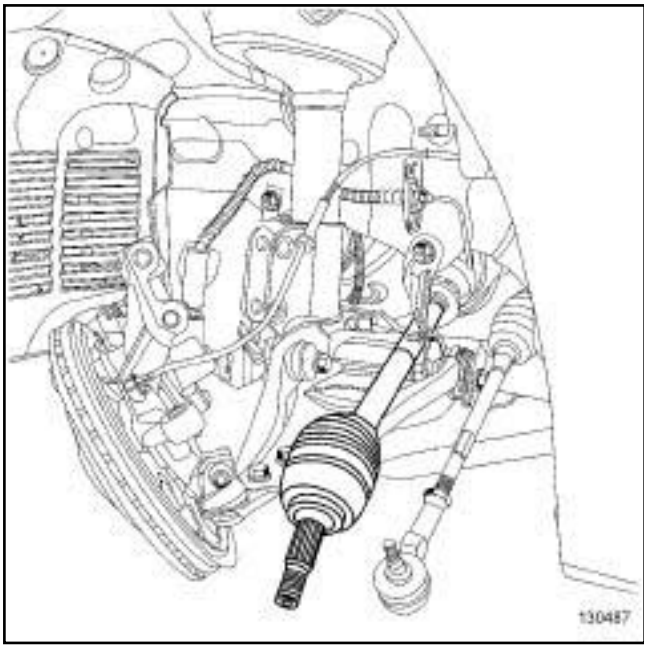
130488

❏ Detach the wiring from the wheel speed sensor (**1**) .

❏ Remove:

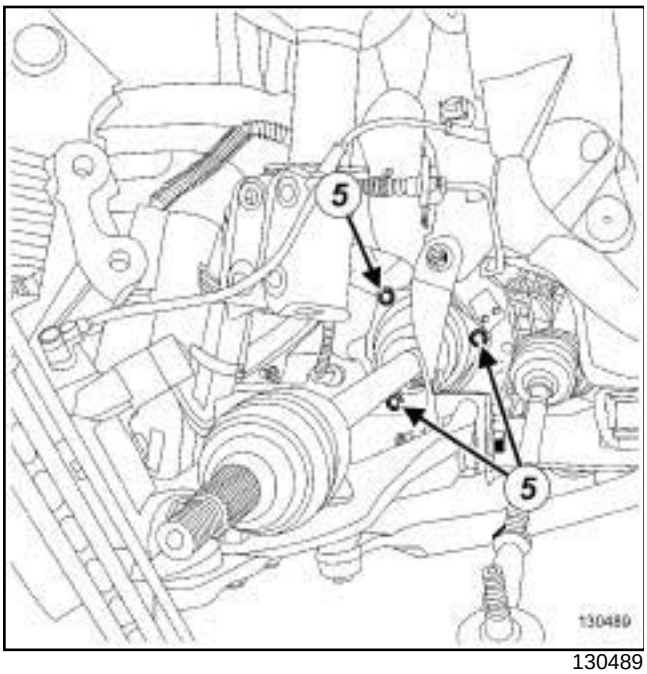
- the hub nut (**2**) by immobilising the hub using the tool **(Rou. 604-01)**,
- the track rod end nut (**3**) ,
- the track rod end from the stub axle carrier using the **(Tav. 476)**,
- the shock absorber base bolts (**4**) .

JB1 or JH1



130487

❏ Push the front left-hand driveshaft back from the stub axle carrier by pivoting the stub axle carrier.



130489

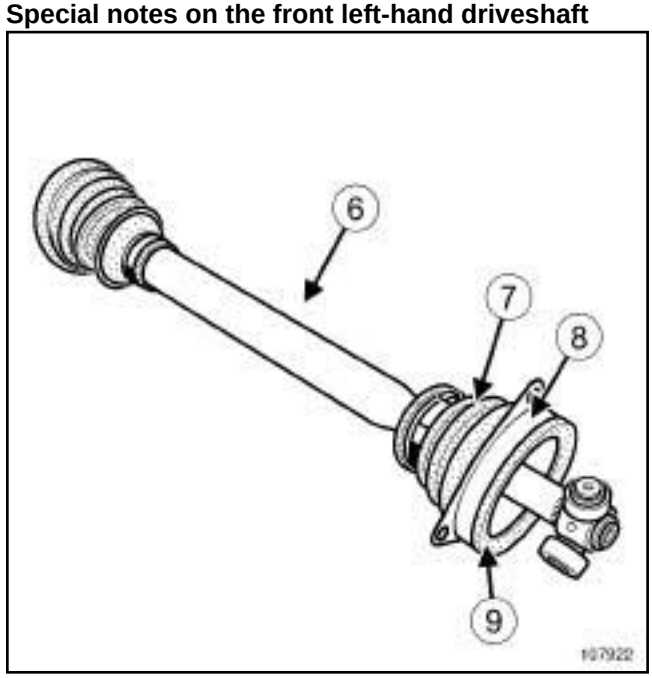
❏ Remove:

- the bolts (**5**) securing the front left-hand driveshaft to the gearbox,
- the front left-hand driveshaft.

REFITTING

I - REFITTING THE DRIVESHAFT

Special notes on the front left-hand driveshaft



107922

(**6**) Front left-hand driveshaft
(**7**) Bearing gaiter (gearbox side)
(**8**) Gaiter flange
(**9**) Gaiter lip (for gearbox seal)

JB1 or JH1

❏ The seal (gearbox side) is made by pushing the gaiter lip (**9**) into its housing on the gearbox, moving the flange (**8**) .

WARNING

To ensure a correct seal when refitting a gaiter to a gearbox:

- the flange (**8**) must be fitted to the gaiter (**7**) (see figure 107922) in order to support the seal lip (**9**) and to fit it correctly into its holder on the gearbox.

Wipe oil from:

- the flange (**8**) ,
- between the flange and the gaiter,
- the seal lip (**9**) ,
- the face of the lip on the gearbox.

Refit the driveshaft on the gearbox side (this operation requires two people):

- Person 1:
  - position the driveshaft at the differential input,
  - fit the flange (**8**) on the gaiter (**7**) ,
  - fit the driveshaft into the gearbox whilst keeping the flange (**8**) on the gaiter,
  - push the flange (**8**) to insert the gaiter lip (**9**) in its housing (do not pinch the gaiter (**7**)).
- Person 2:
  - tighten the 3 flange mounting bolts (**8**) but do not tighten fully (the flange should still be loose).
- Person 1:
  - keep the driveshaft as horizontal as possible (with respect to the differential).
- Person 2:
  - torque tighten **the flange mounting bolts (21 Nm)**.

Note:

The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

❏ Fit the front left-hand driveshaft into the stub axle carrier.

❏ Refit the bolts to the shock absorber base.

❏ Torque tighten the **shock absorber base bolts (105 N.m)**.

❏ Position the track rod.

Torque tighten the **track rod end nut (37 Nm)**.

❏ Refit the hub nut.

❏ Torque tighten the **hub nut (280 N.m)** using the tool **(Rou. 604-01)**.

❏ Clip on the wheel speed sensor wiring harness.

II - FINAL OPERATION.

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

❏ Fill the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❏ Refit the engine undertray.

JH3 or JR5

Special tooling required	
Rou. 604-01	Hub locking tool.
Emb. 880	Pin extractor tool.
Tav. 1813	Extraction claw for clip secured type driveshafts

Tightening torques ▽	
shock absorber base bolts	**105 N.m**
track rod end nut	**37 N.m**
hub nut	**280 N.m**

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

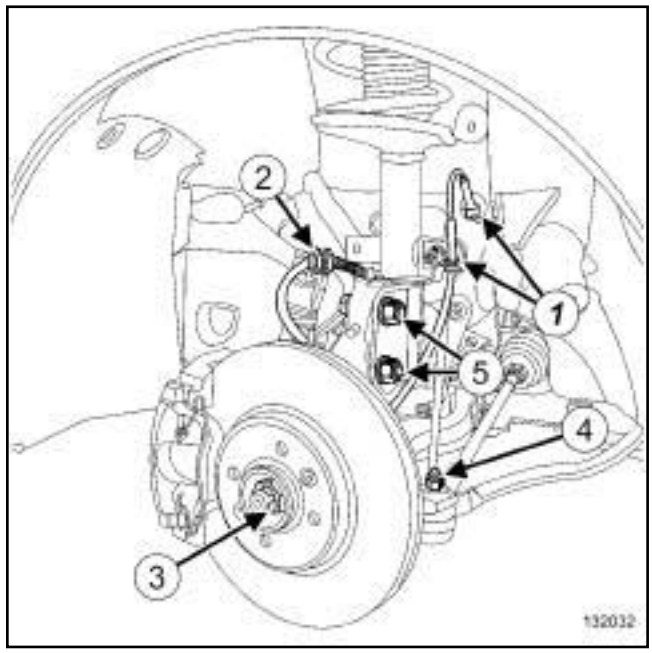
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

- the engine undertray.
- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❏ Drain the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132032

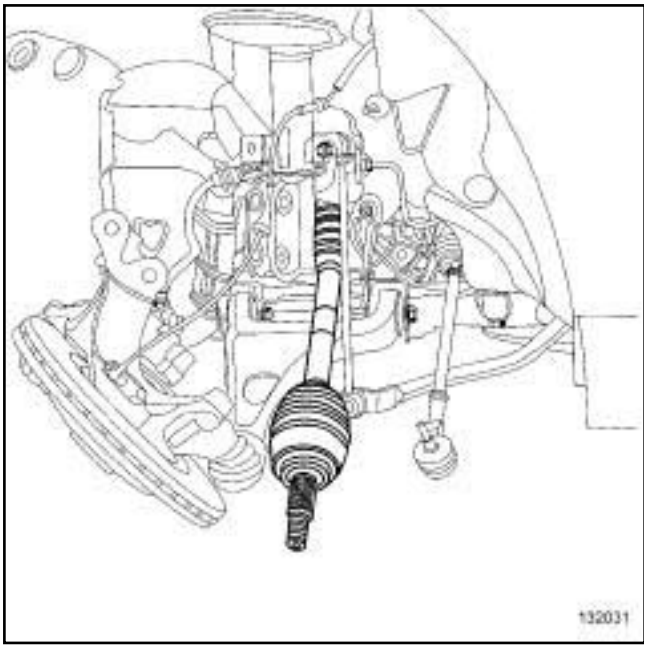
❏ Unclip:

- the wheel speed sensor wiring (**1**) ,
- the brake hose (**2**) .

❏ Remove:

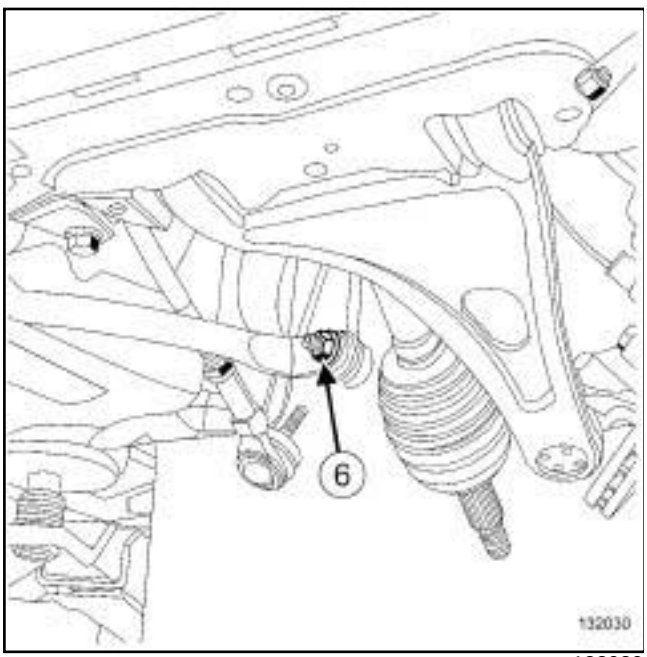
- the hub nut (**3**) by immobilising the hub using the tool **(Rou. 604-01)**,
- the track rod end nut (**4**) ,
- the shock absorber base bolts (**5**) .

JH3 or JR5



132031

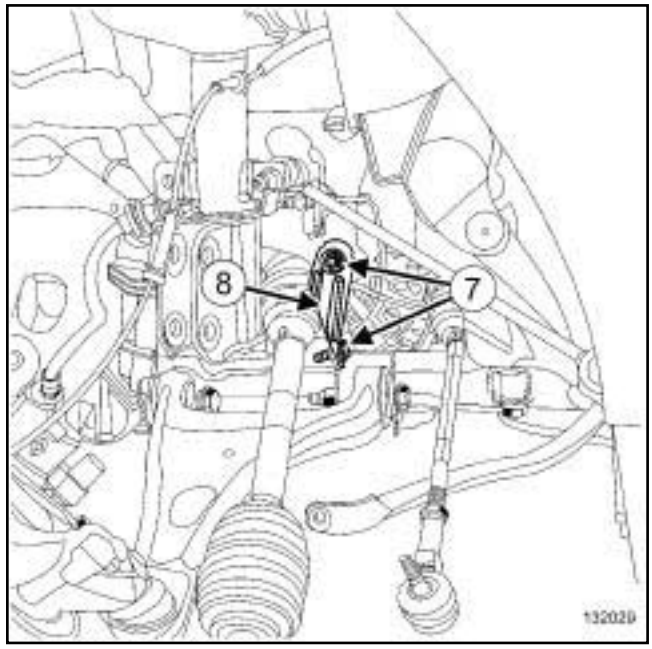
❏ Push the front left-hand driveshaft back from the stub axle carrier by pivoting the stub axle carrier.



132030

❏ Remove the lower nut (**6**) from the left-hand anti-roll bar tie-rod.

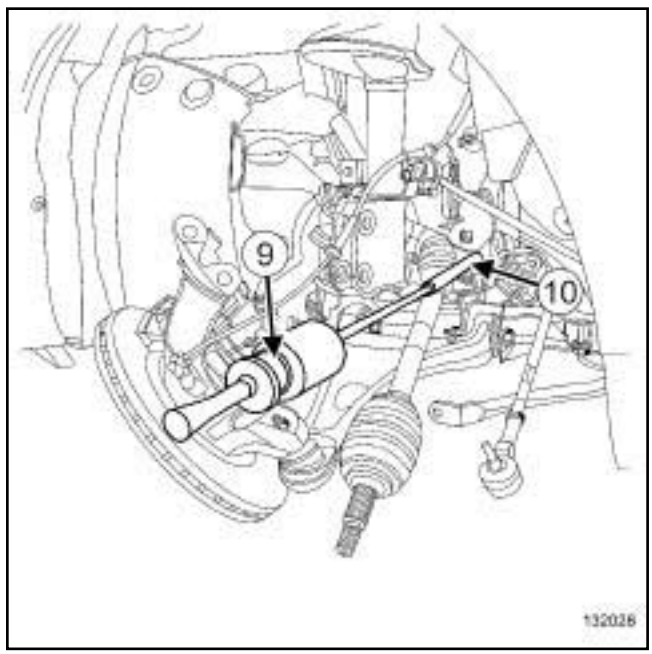
❏ Separate the left-hand anti-roll bar tie-rod.



132029

❏ Remove:

- the bolts (**7**) from the left-hand tie rod,
- the left-hand tie-rod (**8**) .



132028

❏ Extract the front left-hand driveshaft from the manual gearbox using the tool **(Emb. 880)** (**9**) fitted with the tool **(Tav. 1813)** (**10**) .

❏ Remove the front left-hand driveshaft.

JH3 or JR5

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Always replace the differential output seal (see **21A**, **Manual gearbox**, **Differential output seal: Removal - Refitting**, page **21A-38**) .

II - REFITTING OPERATION FOR PART CONCERNED

❑ Fit the front left-hand driveshaft into the gearbox as horizontally as possible.

> Note:
>
> The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

❑ Fit the front left-hand driveshaft into the stub axle carrier.

❑ Refit the bolts to the shock absorber base.

❑ Torque tighten the **shock absorber base bolts (105 N.m)**.

❑ Position the track rod.

❑ Torque tighten the **track rod end nut (37 N.m)**.

❑ Refit the hub nut.

❑ Torque tighten the **hub nut (280 N.m)** using the tool **(Rou. 604-01)**.

❑ Refit the left-hand tie-rod.

❑ Refit the lower nut for the left-hand anti-roll bar tie-rod.

❑ Clip:

- the brake hose,
- the wheel speed sensor wiring.

III - FINAL OPERATION

❑ Top up the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❑ Refit:

- the front left-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the engine undertray.

JB1 or JH1

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques ▽	
shock absorber base bolts	**105 N.m**
track rod end nut	**37 Nm**
hub nut	**280 N.m**

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

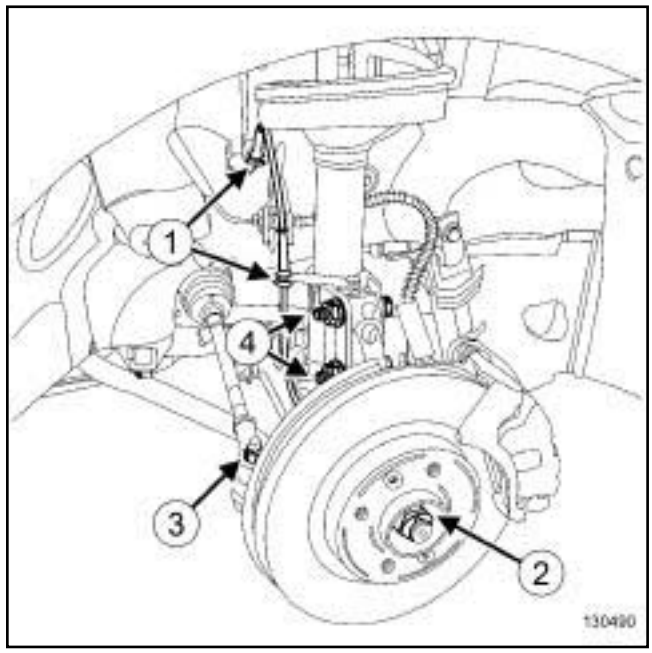
I - REMOVAL PREPARATION OPERATION

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

❏ Remove:

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

II - OPERATION FOR REMOVAL OF PART CONCERNED



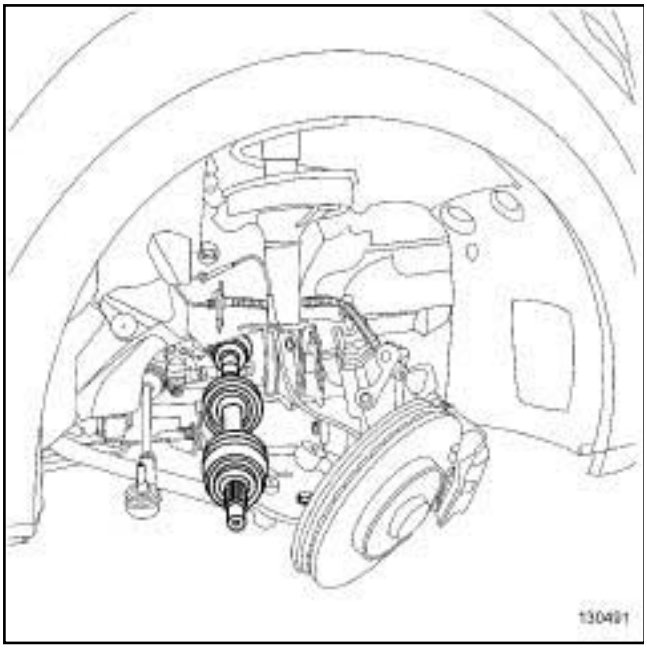
130490

❏ Detach the wiring from the wheel speed sensor (**1**) .

❏ Remove:

- the hub nut (**2**) by immobilising the hub using the tool **(Rou. 604-01)**,
- the track rod end nut (**3**) ,
- the track rod end from the stub axle carrier using the **(Tav. 476)**,
- the shock absorber base bolts (**4**) .

JB1 or JH1



130491

❑ Push the front right-hand driveshaft back from the stub axle carrier by pivoting the stub axle carrier.

❑ Remove the front right-hand driveshaft.

REFITTING

I - REFITTING OPERATION FOR PART CONCERNED

❑ Fit the front right-hand driveshaft to the gearbox sun-wheel.

> Note:
>
> The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

❑ Fit the front right-hand driveshaft into the stub axle carrier.

❑ Refit the bolts to the shock absorber base.

❑ Torque tighten the **shock absorber base bolts (105 N.m)**.

❑ Position the track rod.

❑ Torque tighten the **track rod end nut (37 Nm)**.

❑ Refit the hub nut.

❑ Torque tighten the **hub nut (280 N.m)** using the tool **(Rou. 604-01)**.

❑ Clip on the wheel speed sensor wiring harness.

II - FINAL OPERATION.

❑ Refit:

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

JH3 or JR5

Special tooling required	
Rou. 604-01	Hub locking tool.
Tav. 476	Ball joint extractor.

Tightening torques ▽	
relay bearing bolt	**21 N.m**
shock absorber base bolts	**105 N.m**
track rod end nut	**37 N.m**
hub nut	**280 N.m**

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

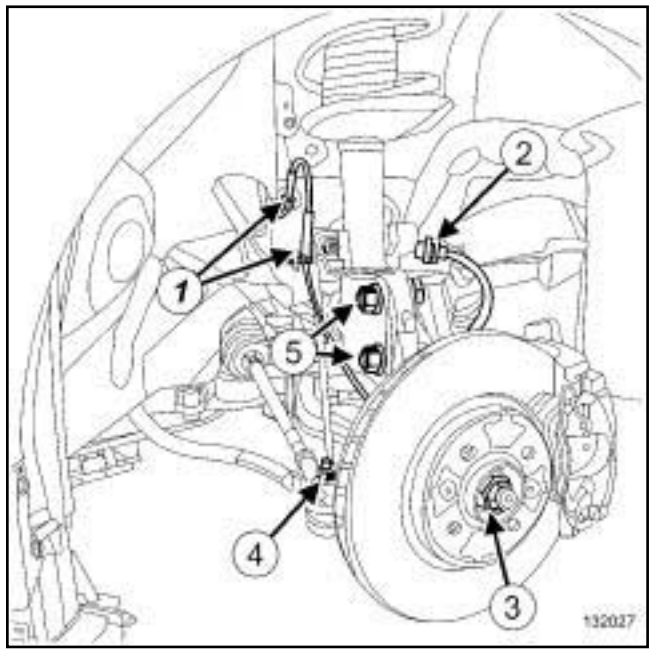
❏ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❏ Remove:

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

❏ Drain the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

II - OPERATION FOR REMOVAL OF PART CONCERNED



132027

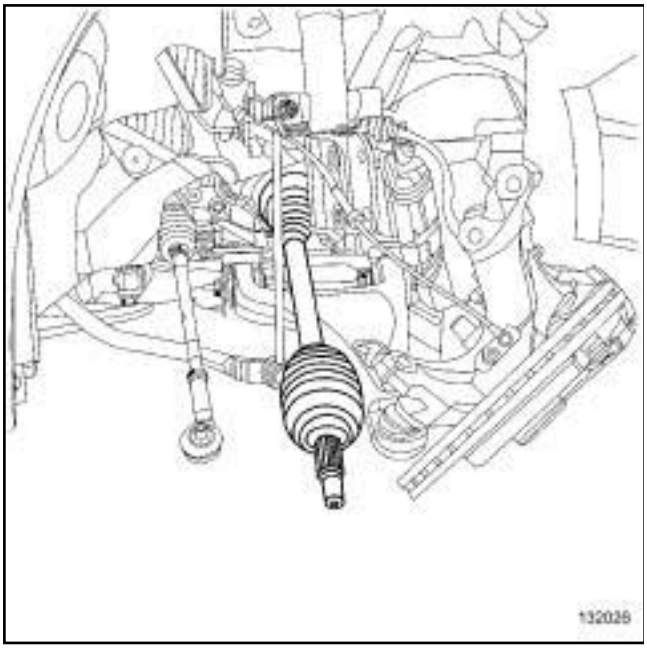
❏ Unclip:

- the wheel speed sensor wiring (**1**) ,
- the brake hose (**2**) .

❏ Remove:

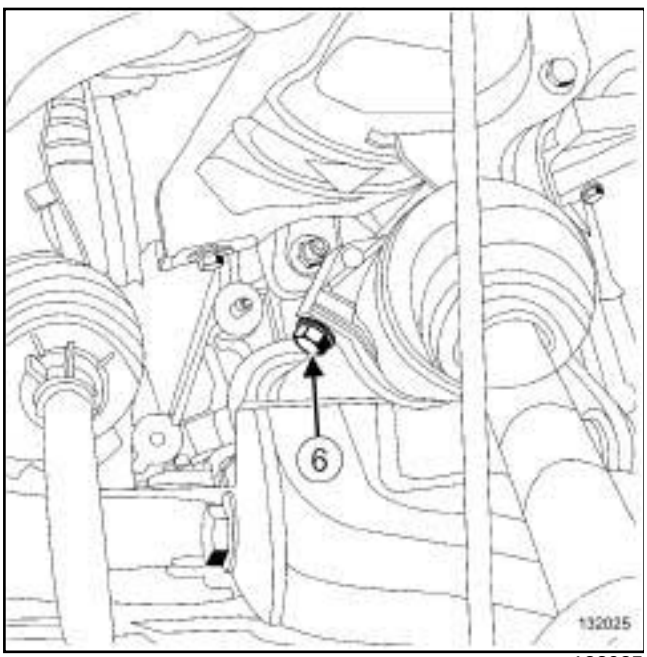
- the hub nut (**3**) by immobilising the hub using the tool **(Rou. 604-01)**,
- the track rod end nut (**4**) ,
- the track rod end from the stub axle carrier using the **(Tav. 476)**,
- the shock absorber base bolts (**5**) .

JH3 or JR5



132026

❑ Push the front right-hand driveshaft back from the stub axle carrier by pivoting the stub axle carrier.



132025

❑ Remove:

- the driveshaft relay bearing bolt (**6**) ,
- the front right-hand wheel driveshaft.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ Always replace the differential output seal (see **21A**, **Manual gearbox**, **Differential output seal: Removal - Refitting**, page **21A-38**) .

❑ Clean the bore of the driveshaft relay bearing into which the bearing will be fitted using **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

❑ Clean and lubricate the bore of the driveshaft relay bearing into which the bearing will be fitted using **BR2+GREASE** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

II - REFITTING OPERATION FOR PART CONCERNED

❑ Position and fit the front right-hand driveshaft into the gearbox.

❑ Refit:

- the front right-hand driveshaft into the relay bearing,
- the relay bearing bolt.

❑ Torque tighten the **relay bearing bolt (21 N.m)**.

> Note:
>
> The driveshaft must fit freely into the stub-axle carrier until it protrudes enough for the hub nut to be fitted.

❑ Fit the front right-hand driveshaft into the stub axle carrier.

❑ Refit the bolts to the shock absorber base.

❑ Torque tighten the **shock absorber base bolts (105 N.m)**.

❑ Position the track rod.

❑ Torque tighten the **track rod end nut (37 N.m)**.

❑ Refit the hub nut.

❑ Torque tighten the **hub nut (280 N.m)** using the tool **(Rou. 604-01)**.

❑ Clip:

- the brake hose,
- the wheel speed sensor wiring.

JH3 or JR5

III - FINAL OPERATION

❑ Top up the gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❑ Refit:

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

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 bolts,
- the engine undertray.

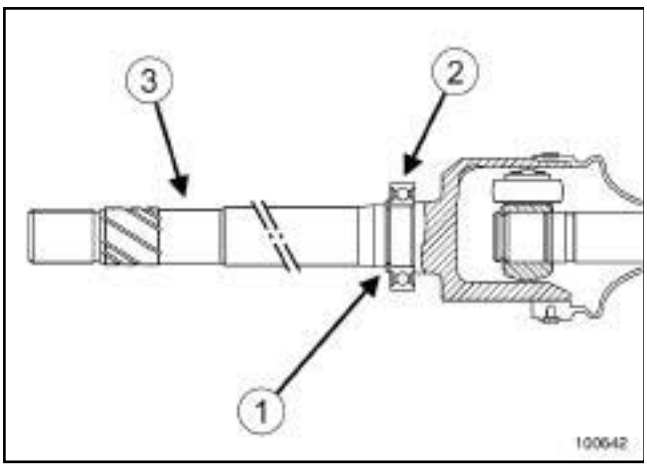
❑ Drain the manual gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

❑ 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-8**) .

❑ Extract the deflector using a press and an extractor.

II - OPERATION FOR REMOVAL OF PART CONCERNED



100642

❑ Remove the rubber ring (**1**) of the relay bearing (**2**) .

Note:

Do not scratch the mating face of the lip seal on the relay shaft (**3**) .

❑ Extract the relay shaft bearing (**2**) using a press and an extractor.

REFITTING

I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Relay shaft bearing**.

parts always to be replaced: relay bearing rubber ring.

❑ Clean and degrease the bore of the relay bearing with **SURFACE CLEANER** (see **Vehicle: Parts and consumables for the repair**) (04B, Consumables - Products).

❑ Lubricate the mating face of the driveshaft receiving the deflector and the relay shaft bearing.

II - REFITTING OPERATION FOR PART CONCERNED

❑ Fit a new relay shaft bearing to the relay shaft.

❑ Fit the bearing to the end using a tube, so that it rests on the inner bush of the bearing.

❑ Refit a new rubber ring for the relay bearing.

III - FINAL OPERATION

❑ Fit a new deflector to the relay shaft.

❑ Fit the deflector to the end using a tube, so that it rests on the surface of the deflector.

❑ Clean and grease the bearing hole into which the bearing will be inserted.

❑ Refit:

- the front right-hand driveshaft (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres).

❑ Fill up the manual gearbox (see **21A**, **Manual gearbox**, **Manual gearbox oils: Draining - Filling**, page **21A-2**) .

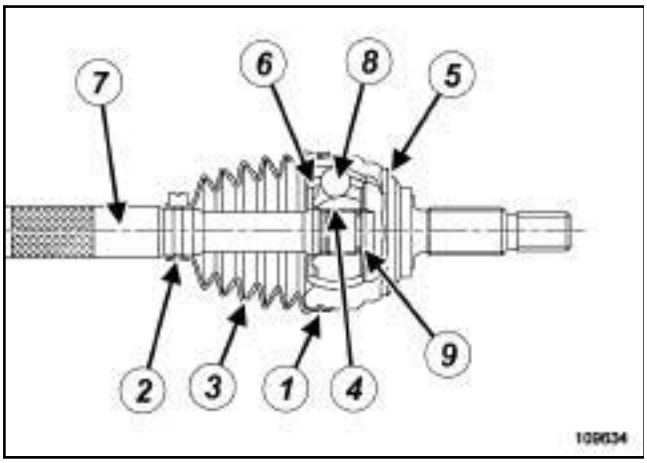
❑ Refit the engine undertray.

Front driveshaft gaiter, wheel side: Removal - Refitting

JB1 or JH1 or JH3 or JR5

Special tooling required	
Tav. 1168	"Clic" type clip pliers for driveshafts with a thermoplastic gaiter.
Tav. 1784	Pliers for the driveshaft gaiter collar.

Equipment required
steel inertia hammer
roll pin punch
parts washer



109634

(**1**) Big securing clip
(**2**) Small securing clip
(**3**) Driveshaft gaiter
(**4**) Ball hub
(**5**) Stub axle bowl
(**6**) Ball race
(**7**) Driveshaft
(**8**) Balls
(**9**) Locking spring ring

IMPORTANT
Wear leaktight gloves (Nitrile type) for this operation.

REMOVAL

I - REMOVAL PREPARATION OPERATION

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

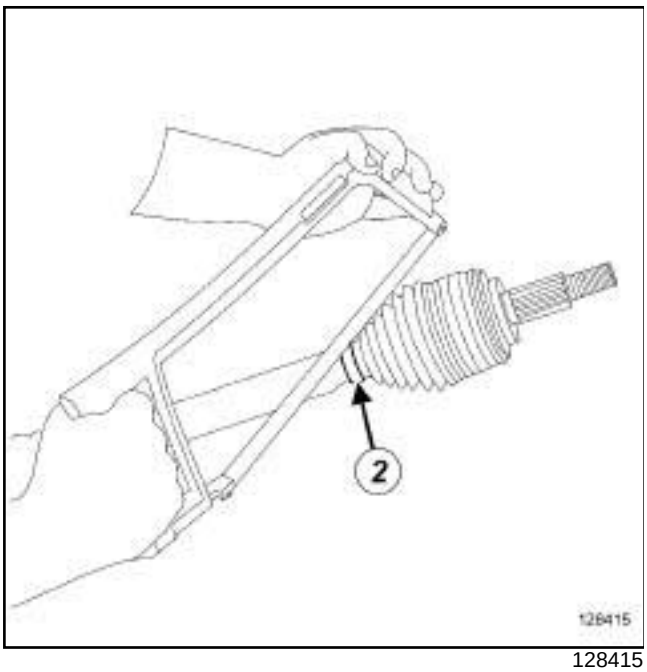
❑ Remove:

- the engine undertray,
- the wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the driveshaft on the side concerned (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) or (see **29A**, **Driveshafts**, **Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) .

JB1 or JH1 or JH3 or JR5

II - OPERATION FOR REMOVAL OF PART CONCERNED

93034



128415

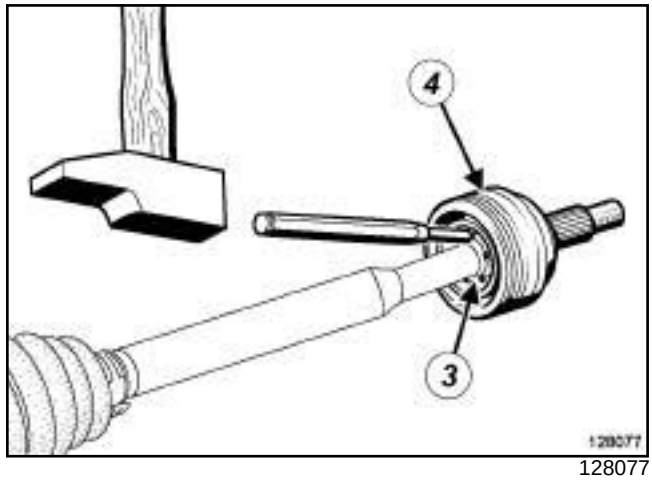
❑ Cut the big securing clip (**1**) and the small securing clip (**2**) using cutting pliers or a metal saw, taking care not to damage the stub axle bowl and the driveshaft.

❑ Push back the gaiter to release the stub axle bowl.

❑ Cut off the driveshaft gaiter.

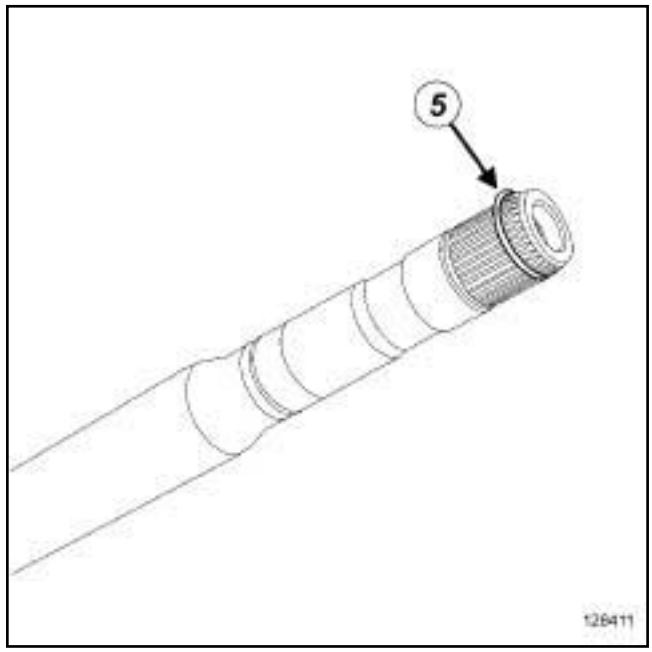
❑ Remove the driveshaft gaiter.

❑ Remove as much grease as possible.



128077

❑ Tap the hub bearing several times (**3**) using a **steel inertia hammer** and a **roll pin punch** to separate the stub axle bowl (**4**) from the driveshaft.



128411

❑ Remove the locking spring ring (**5**) .

REFITTING

I - REFITTING PREPARATION OPERATION

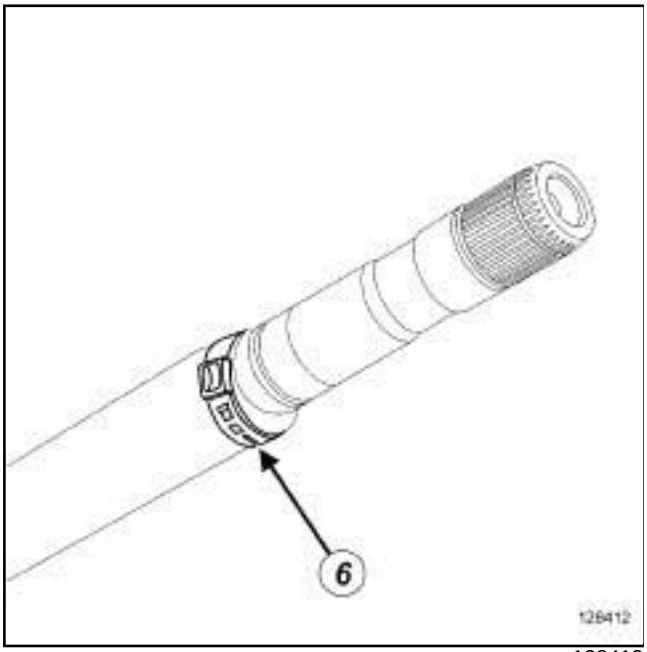
❑ Always replace:

- the driveshaft gaiter,
- the big securing clip,
- the small securing clip,
- the locking spring ring.

❑ Using a **parts washer**, clean the driveshaft and the stub axle bowl.

JB1 or JH1 or JH3 or JR5

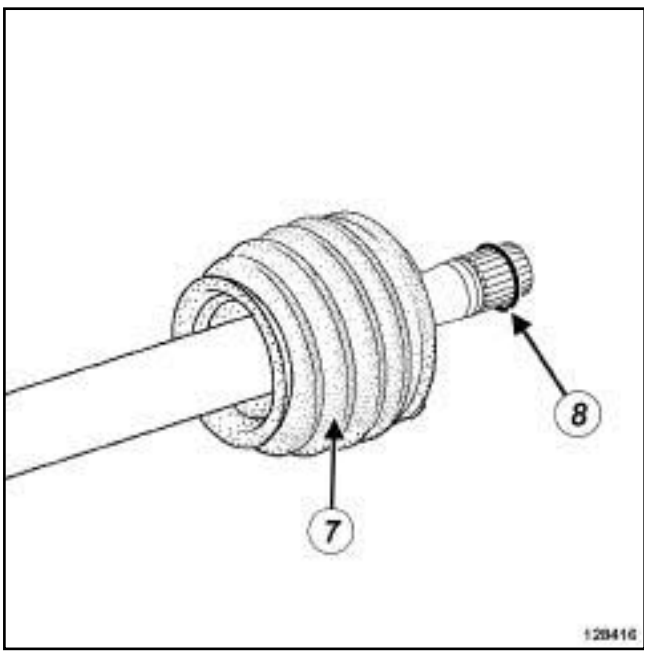
II - REFITTING OPERATION FOR PART CONCERNED



128412

❏ Fit the small securing clip (**6**) onto the driveshaft.

❏ Lightly lubricate the driveshaft using the grease supplied with the gaiter to facilitate its fitting.



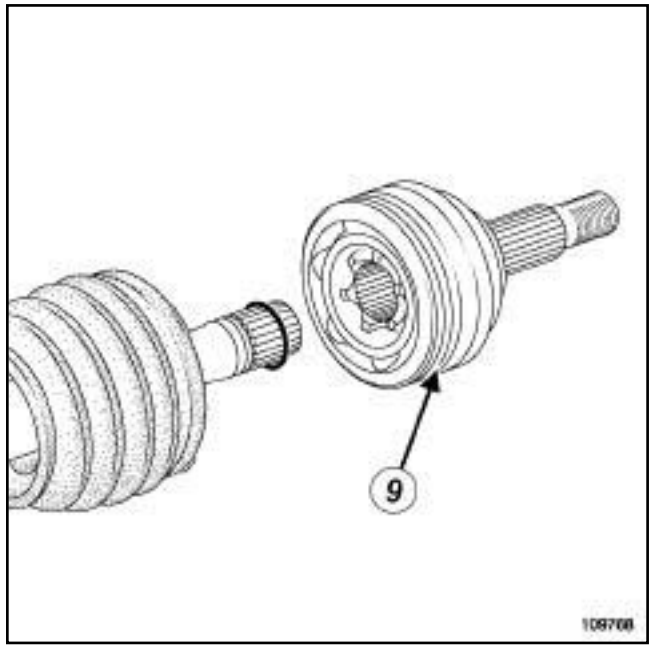
128416

❏ Refit the gaiter (**7**) onto the driveshaft.

❏ Insert the gaiter lip into the groove of the driveshaft.

❏ Refit the locking spring ring (**8**) .

❏ Spread the quantity of grease around the gaiter and the stub axle bowl.



109768

❏ Refit the stub axle bowl (**9**) to the driveshaft by tapping on the stub axle bowl using a brass drift until the locking spring ring clicks into place behind the hub bearing.

❏ Fit the lip of the driveshaft gaiter into the groove on the stub axle bowl.

Note:

Check that the gaiter lip is correctly positioned in the groove of the driveshaft.

❏ Fit the small securing clip on the driveshaft gaiter.

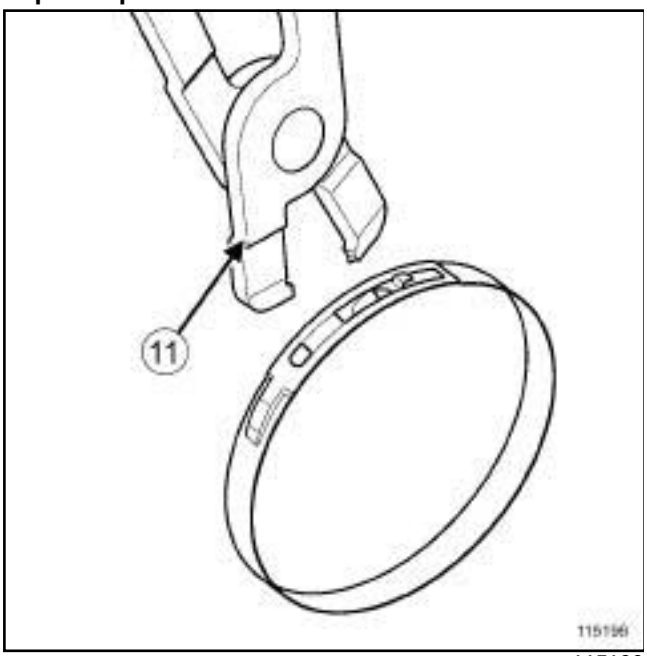
❏ Refit the big securing clip on the driveshaft gaiter.

JB1 or JH1 or JH3 or JR5

Clic clip

115197

Clip with profile end



115196

❑ Tighten the clips using the tool **(Tav. 1168)** (**10**) for clic clips or the tool **(Tav. 1784)** (**11**) for profile end clips.

III - FINAL OPERATION

❑ Refit:

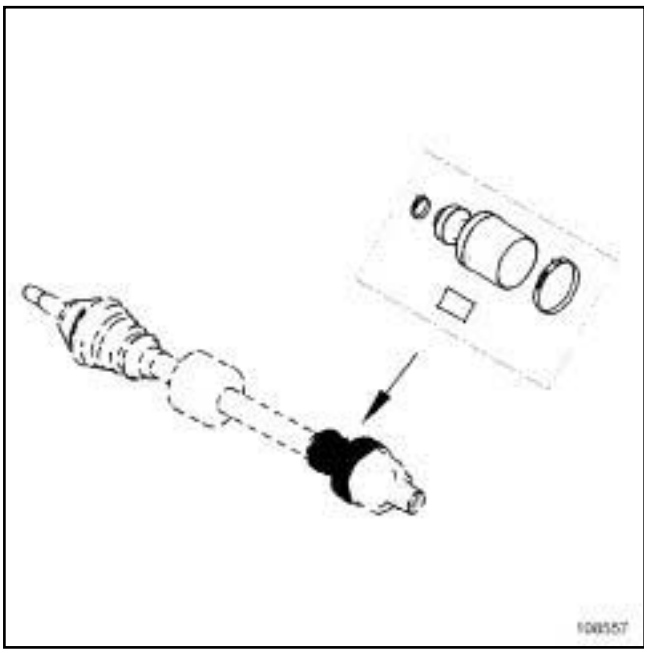
- the driveshaft on the side concerned (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) or (see **29A**, **Driveshafts**, **Front left-hand driveshaft: Removal - Refitting**, page **29A-2**) ,
- the wheel on the side concerned (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the engine undertray.

Front right-hand driveshaft gaiter, gearbox side: Removal - Refitting

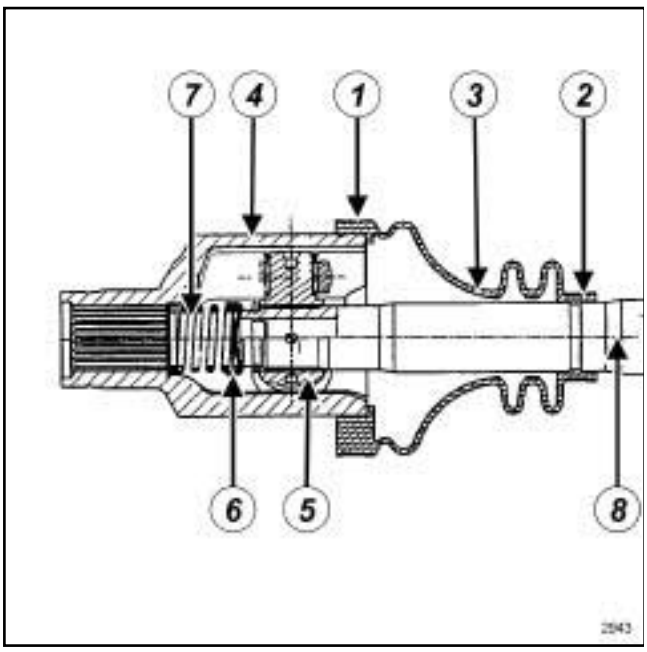
JB1 or JH1 or JH3 or JR5

Special tooling required	
Tav. 1168	"Clic" type clip pliers for driveshafts with a thermoplastic gaiter.
Tav. 1784	Pliers for the driveshaft gaiter collar.

Equipment required
parts washer



108557



2943

(**1**) Big securing clip
(**2**) Small securing clip
(**3**) Driveshaft gaiter
(**4**) Yoke sleeve
(**5**) Spider
(**6**) Cup
(**7**) Cup spring
(**8**) Driveshaft

IMPORTANT

Wear leaktight gloves (Nitrile type) for this operation.

REMOVAL

I - REMOVAL PREPARATION OPERATION

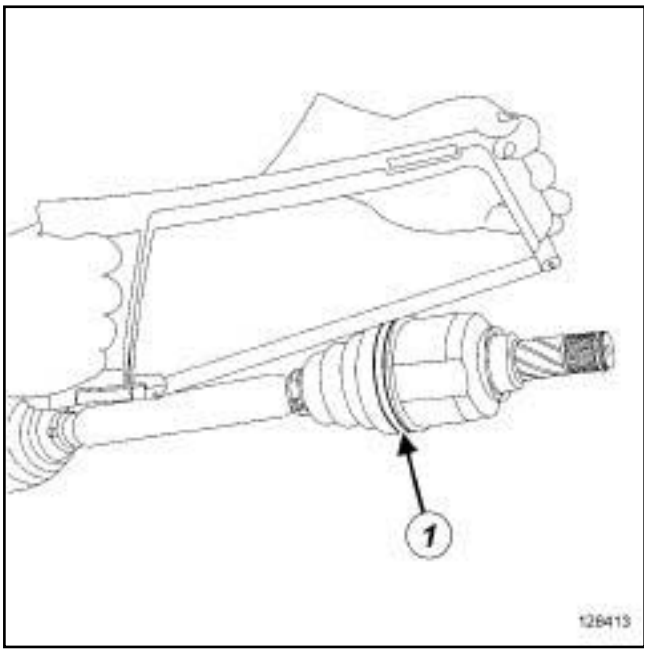
❑ Position the vehicle on a two-post lift (see **Vehicle: Towing and lifting**) (02A, Lifting equipment).

❑ Remove:

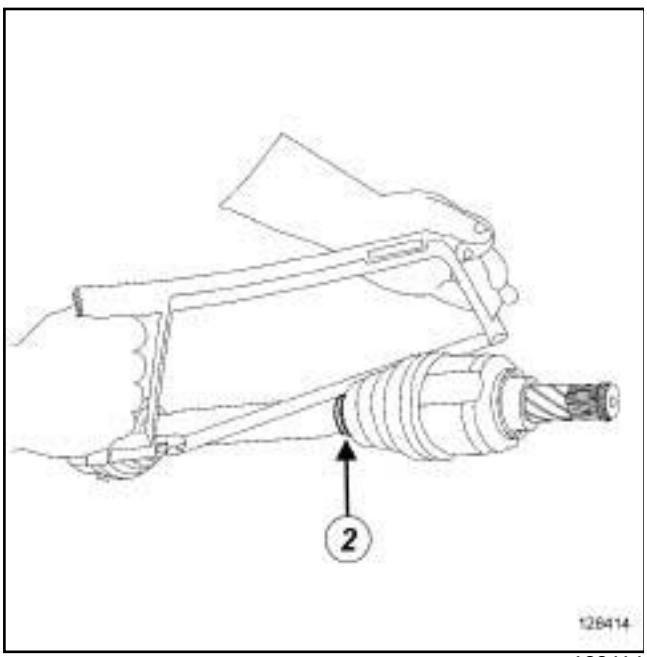
- the engine undertray,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the front right-hand driveshaft (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) .

JB1 or JH1 or JH3 or JR5

II - OPERATION FOR REMOVAL OF PART CONCERNED



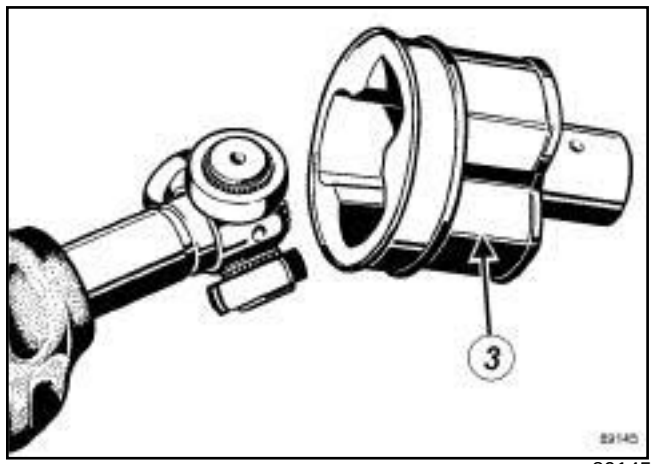
128413



128414

❏ Cut the big securing clip (**1**) and the small securing clip (**2**) using cutting pliers or a metal cutting saw, taking care not to damage the yoke sleeve and the driveshaft.

❏ Push back the driveshaft gaiter to release the yoke sleeve.



89145

❏ Remove the yoke sleeve (**3**) .

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.

❏ Remove as much grease as possible from the yoke sleeve.

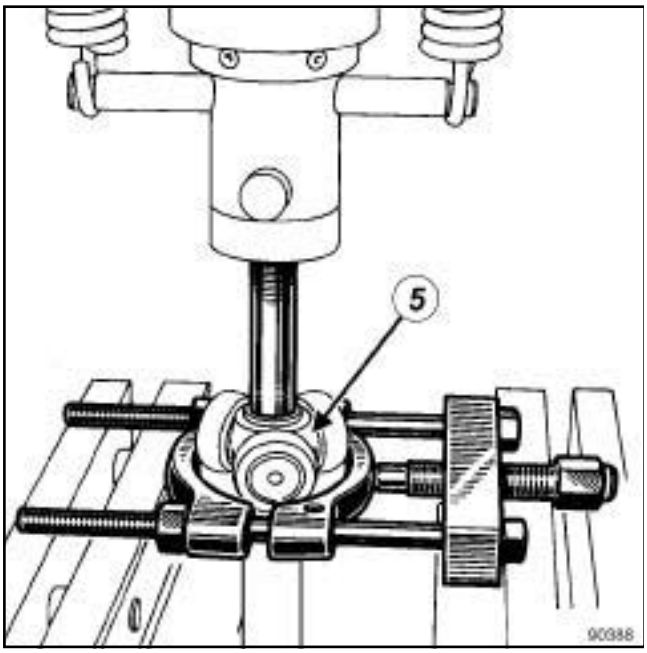
JB1 or JH1 or JH3 or JR5

90387

❏ Remove the lock ring (**4**) .

Note:

Mark the position of the spider before extracting it.



90388

❏ Remove:

- the spider (**5**) using a separator and a press,
- the driveshaft gaiter from the driveshaft.

REFITTING

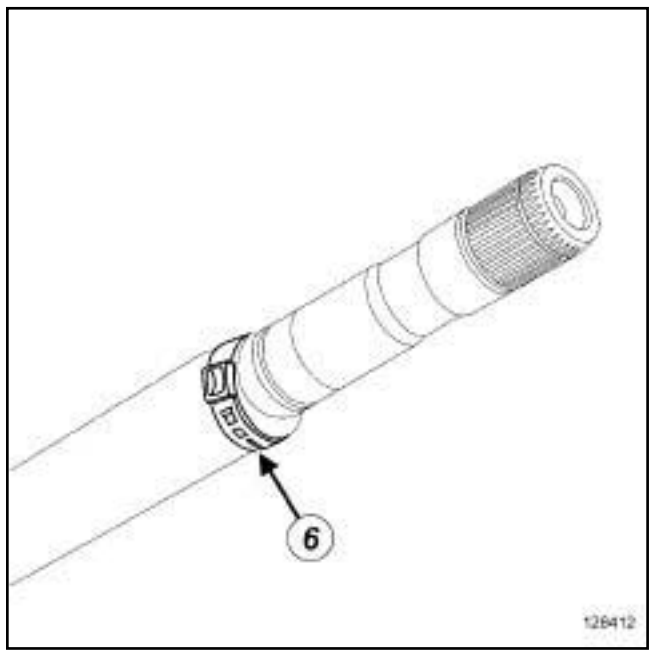
I - REFITTING PREPARATION OPERATION

❏ Always replace:

- the cup,
- the cup spring,
- the driveshaft gaiter,
- the stop ring,
- the big securing clip,
- the small securing clip.

❏ Using a **parts washer**, clean the driveshaft, the spider and the yoke sleeve.

II - REFITTING OPERATION FOR PART CONCERNED

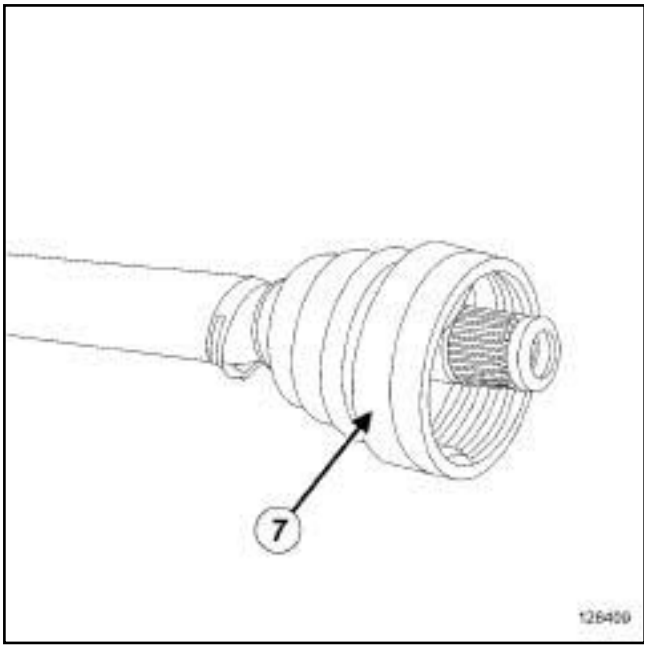


128412

❏ Fit the small securing clip (**6**) onto the driveshaft.

❏ Lightly lubricate the driveshaft using the grease supplied with the gaiter to facilitate its fitting.

JB1 or JH1 or JH3 or JR5



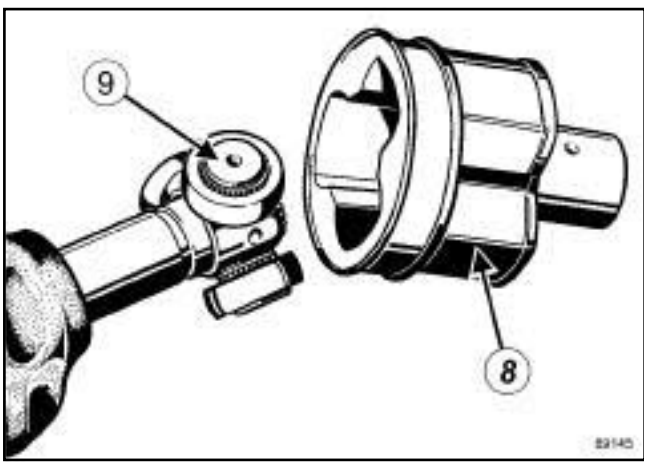
128409

❏ Refit the gaiter (**7**) onto the driveshaft.

❏ Insert the gaiter lip into the groove of the driveshaft.

❏ Refit:

- the spider in the position marked during removal,
- the stop ring,
- the cup onto the cup spring,
- the cup spring equipped with the cup into the driveshaft yoke sleeve.



89145

❏ Spread the quantity of grease around the gaiter and the yoke sleeve.

❏ Fit the driveshaft yoke sleeve (**8**) to the spider (**9**) .

❏ Insert the gaiter lip into the groove of the yoke sleeve.

Note:

Check that the gaiter lip is correctly positioned in the groove of the driveshaft.

❏ Fit the small securing clip on the driveshaft gaiter.

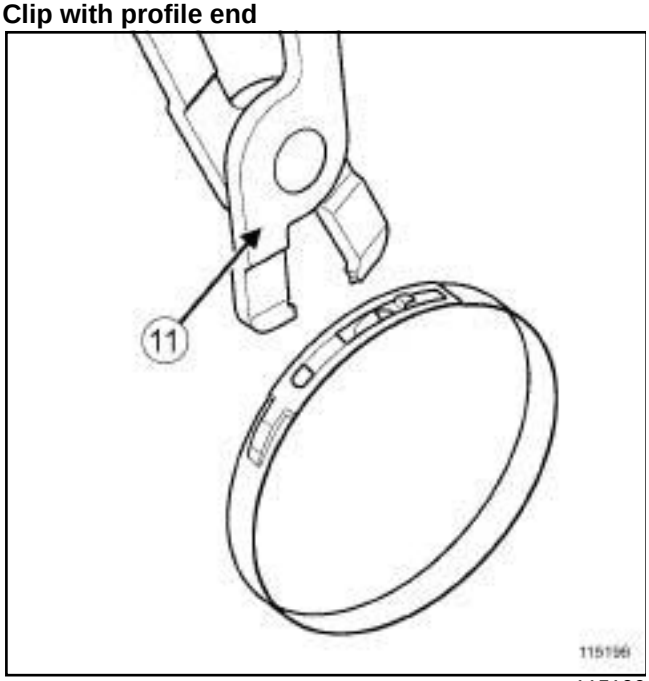
❏ Refit the big securing clip on the driveshaft gaiter.

JB1 or JH1 or JH3 or JR5

Clic clip

115197

Clip with profile end



115196

❑ Tighten the clips using the tool **(Tav. 1168)** (**10**) for clic type clips or the tool **(Tav. 1784)** (**11**) for profile end clips.

III - FINAL OPERATION

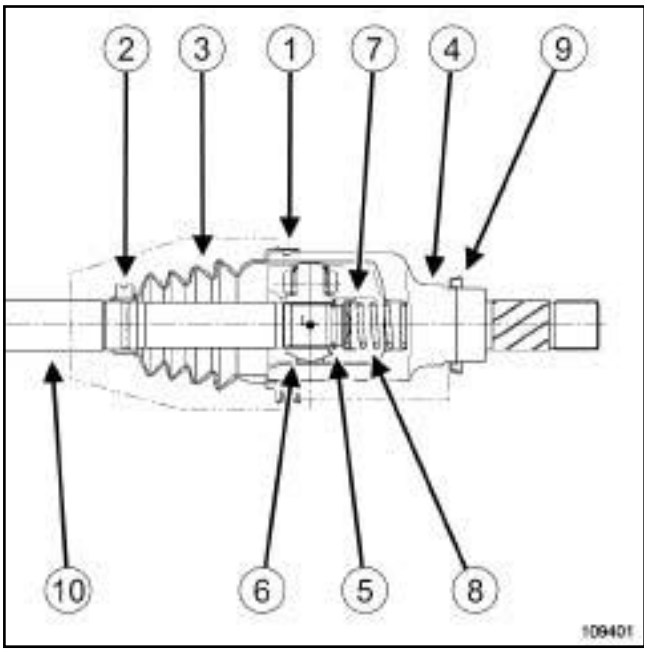
❑ Refit:

- the front right-hand driveshaft (see **29A**, **Driveshafts**, **Front right-hand driveshaft: Removal - Refitting**, page **29A-8**) ,
- the front right-hand wheel (see **Wheel: Removal - Refitting**) (35A, Wheels and tyres),
- the engine undertray.

JH3 or JR5

Special tooling required	
Tav. 1168	"Clic" type clip pliers for driveshafts with a thermoplastic gaiter.

Equipment required
parts washer



109401

(**1**) Big securing clip
(**2**) Small securing clip
(**3**) Driveshaft gaiter
(**4**) Driveshaft yoke sleeve
(**5**) Lock ring
(**6**) Spider
(**7**) Cup
(**8**) Cup spring
(**9**) Deflector
(**10**) Driveshaft

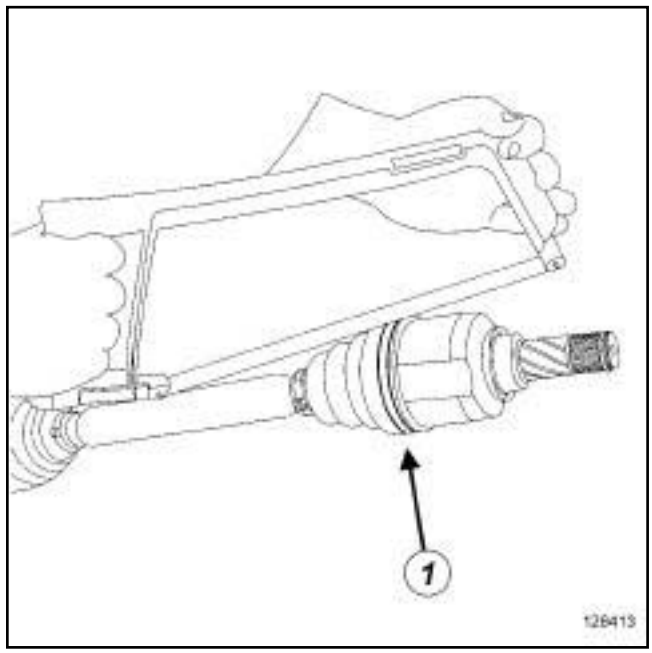
IMPORTANT
Wear leaktight gloves (Nitrile type) for this operation.

REMOVAL

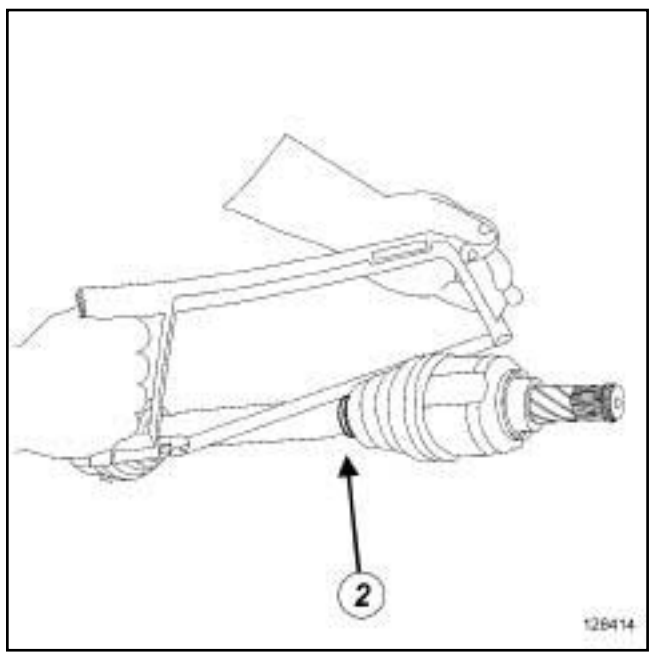
I - REMOVAL PREPARATION OPERATION

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

II - REMOVAL OPERATION



128413

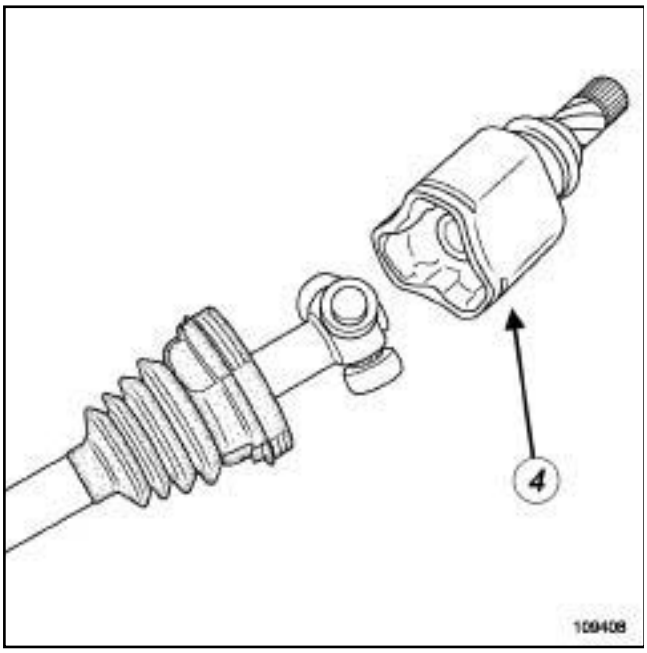


128414

❑ Cut the big securing clip (**1**) and the small securing clip (**2**) using cutting pliers or a metal saw, taking care not to damage the yoke sleeve or the driveshaft.

JH3 or JR5

❏ Push back the driveshaft gaiter to release the driveshaft yoke sleeve.



109408

❏ Remove the driveshaft yoke sleeve (**4**) .

Note:

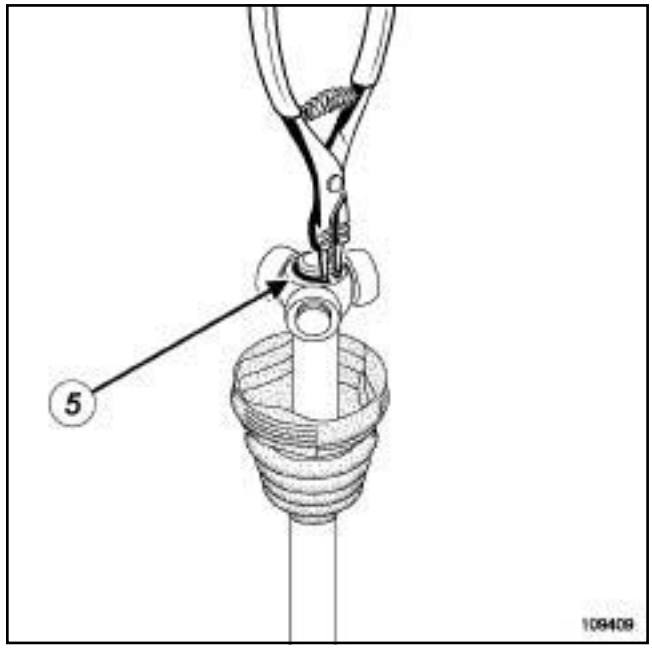
- Since the driveshaft yoke sleeve does not have a stop tab, it can be removed without being forced,

- do not remove the rollers from their respective bushings as the rollers and needles are matched and should never be interchanged.

❏ Remove as much grease as possible.

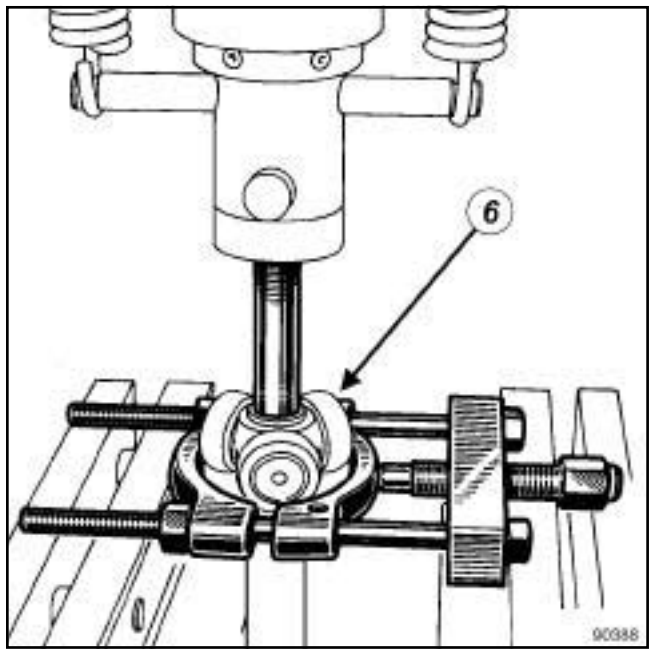
Note:

Never use thinner to remove grease.



109409

❏ Remove the lock ring (**5**) using **circlip pliers**.



90388

❏ Remove the spider (**6**) using a press and a releasing type extractor.

Note:

Mark the position of the spider before extracting it.

❏ Remove:

- the gaiter from the driveshaft,

- the cup equipped with the cup spring.

JH3 or JR5

REFITTING

I - REFITTING PREPARATION OPERATION

❑ **parts always to be replaced: Front left-hand driveshaft gaiter, gearbox side**.

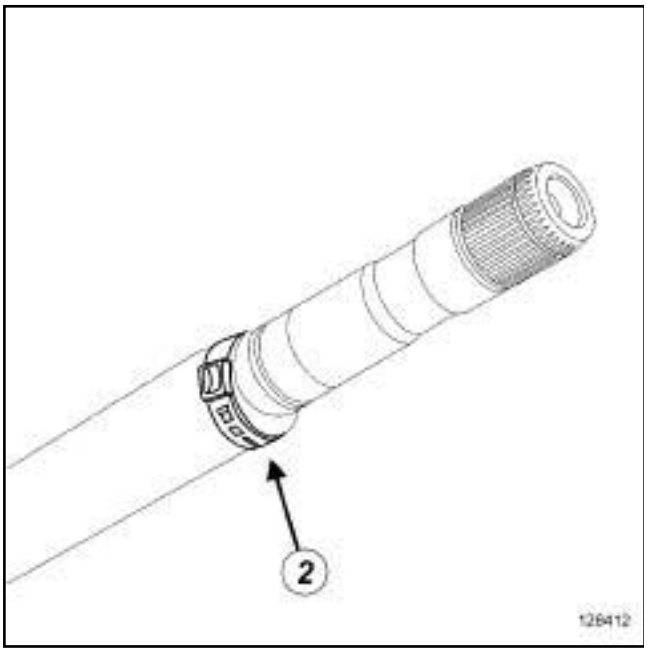
❑ **parts always to be replaced: gearbox side front driveshaft seal locking ring**.

❑ Always replace:

- the cup,
- the cup spring,
- the big securing clip,
- the small securing clip.

❑ Use a **parts washer** to clean the driveshaft, the spider and the driveshaft yoke sleeve.

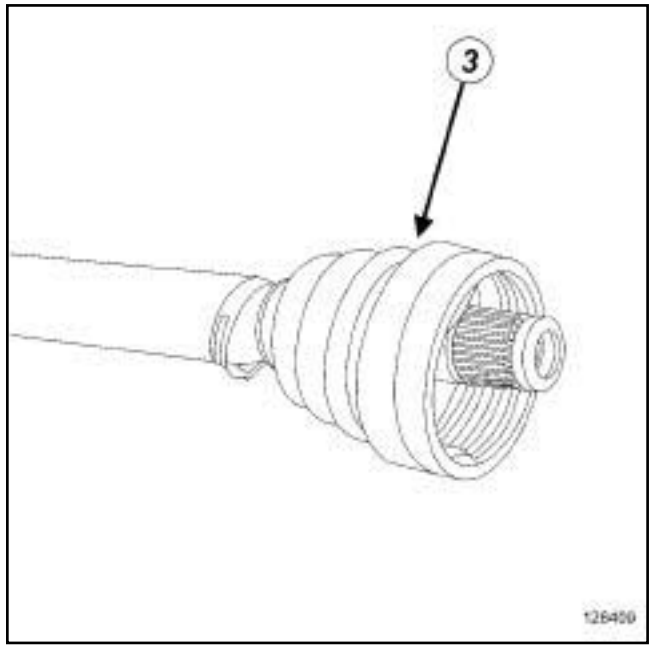
II - REFITTING OPERATION



128412

❑ Fit the small tightening clip (**2**) to the driveshaft.

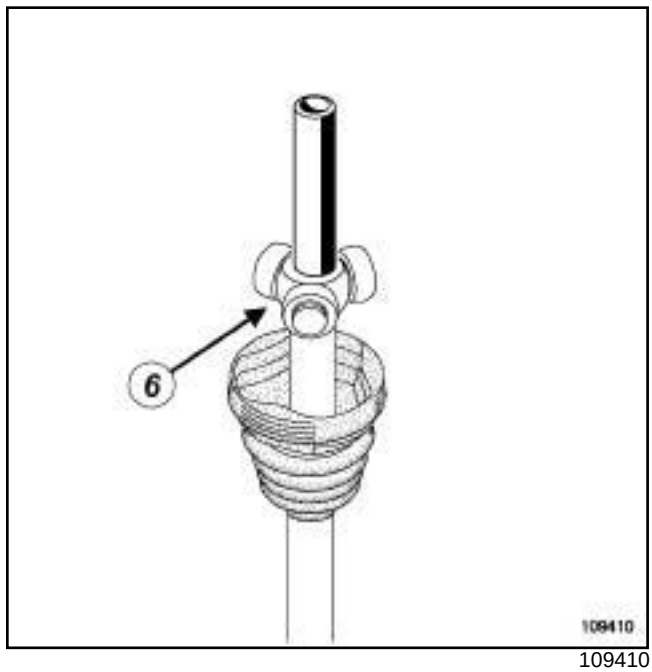
❑ Lightly lubricate the driveshaft using the **GREASE** supplied with the gaiter to facilitate its fitting.



128409

❑ Refit the gaiter (**3**) onto the driveshaft.

❑ Insert the gaiter lip into the groove of the driveshaft.

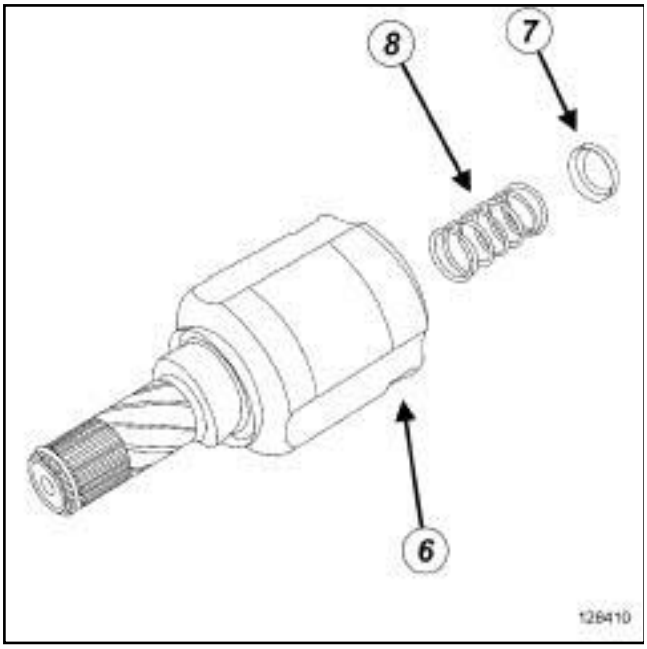


109410

❑ Refit:

- the spider (**6**) in the position marked during removal,
- a new lock ring using **circlip pliers**.

JH3 or JR5



128410

❏ Refit:

- the cup (**7**) onto the cup spring (**8**) ,
- the cup spring equipped with the cup into the driveshaft yoke sleeve (**6**) .

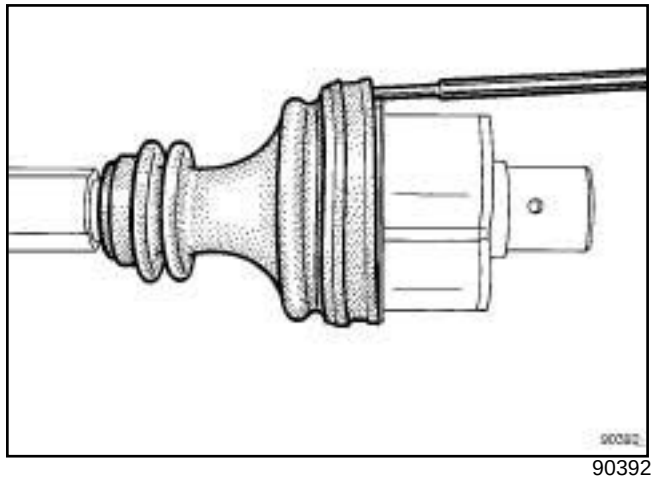
❏ Divide the quantity of grease between the driveshaft gaiter and the yoke sleeve.

❏ Fit the driveshaft yoke sleeve onto the spider.

❏ Position the driveshaft gaiter lip into the groove of the yoke sleeve.

Note:

Check that the gaiter lip is correctly positioned in the groove of the driveshaft.



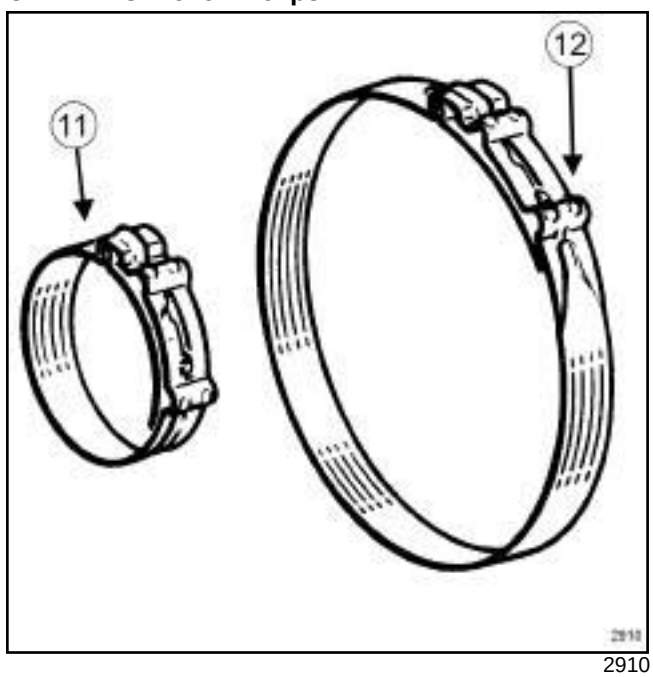
90392

❏ Insert a smooth rod with a rounded end between the gaiter and driveshaft to control the amount of air inside the joint.

❏ Fit:

- the small securing clip on the driveshaft gaiter,
- the big securing clip on the driveshaft gaiter.

CAILLEAU « click » clips

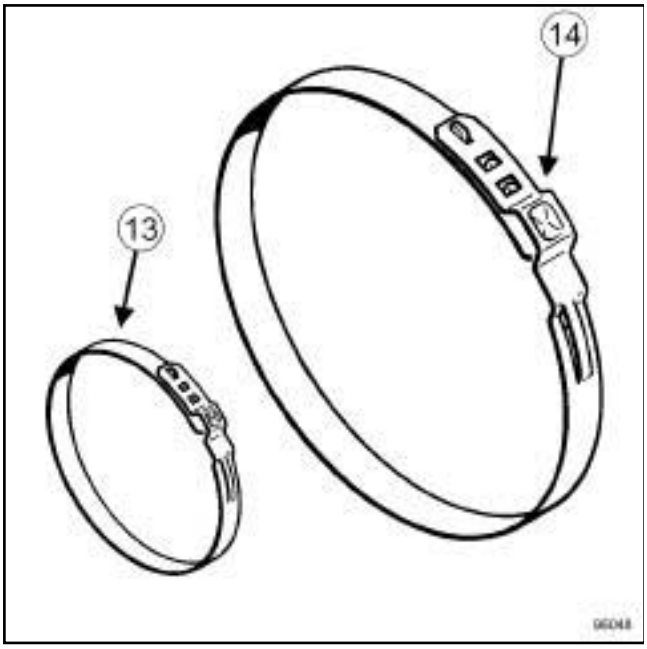


2910

❏ Tighten the small clip (**11**) and the big clip (**12**) until they click, using the tool **(Tav. 1168)**.

JH3 or JR5

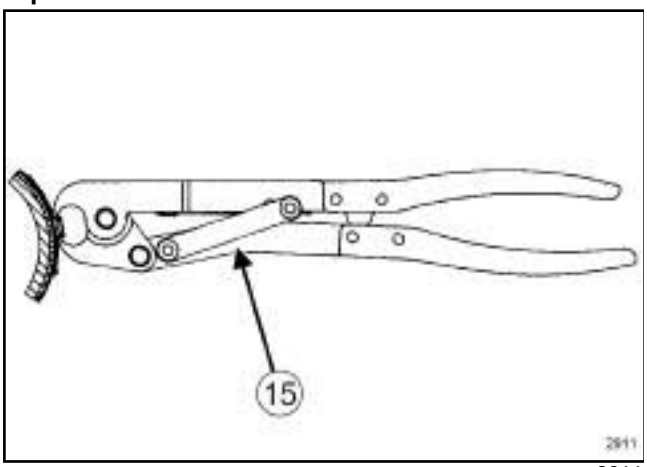
OETIKER clips



96048

❏ Tighten the small clip (**13**) and the big clip (**14**) using the tool.

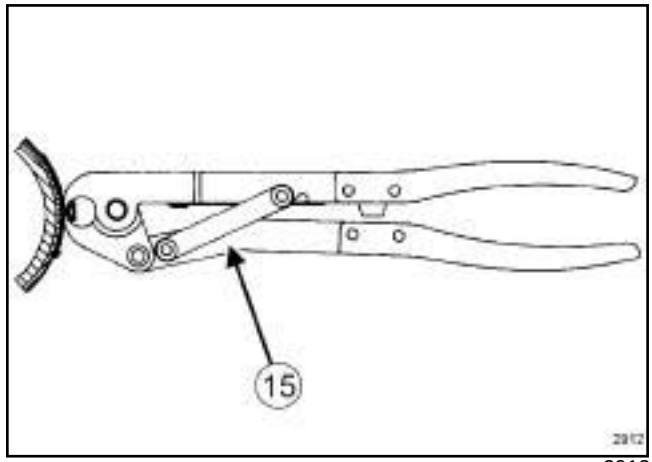
Position 1 - Pre-tightening and positioning of the clip



2911

❏ Put the linkage (**15**) in the lower position, and close the pliers fully. The pre-tightened clip slides onto the gaiter and can be positioned.

Position 2 - Tightening



2912

❏ Put the linkage (**15**) in the upper position, and close the pliers fully.

III - FINAL OPERATION

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