



Technical Note 3587A

XB0W

**Basic manual: Workshop Repair Manuals 325 and 337
and Technical Note 3522A**

Special notes for Clio II Sequential gearbox D4F engine

77 11 309 922

FEBRUARY 2002

EDITION ANGLAISE

*The repair methods given by the manufacturer in this document are based on the technical specifications current when it was prepared.

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed.

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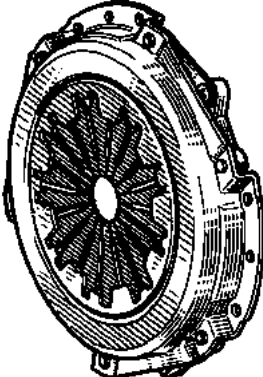
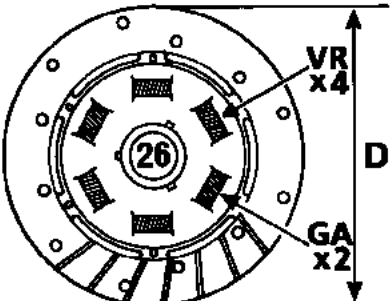

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CLUTCH
Identification

20B

VEHICLE TYPE	GEARBOX TYPE	ENGINE TYPE	MECHANISM	PLATE
XBOW	JH1 007	D4F 712	180 CPO 3300	<p>26 splines E = 6.7 mm, D = 181.5 mm, GA = Silver Grey, VR = Violet Red</p>    <p>85873S 90693R8 76906R</p>

JH1									
Suffix	Vehicle type	Differential ratio	Speedometer ratio	1 st	2 nd	3 rd	4 th	5 th	Reverse gear
007	XB0W	15:61	21:19	11:37	22:41	28:37	34:35	39:32	11:39

Capacity - Lubricants

CAPACITY

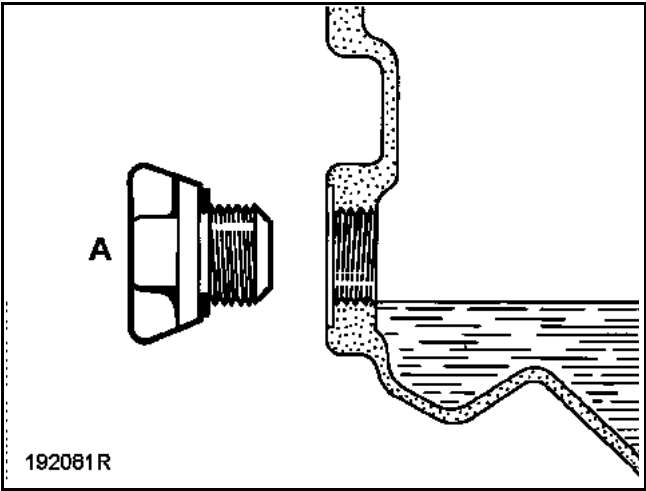
JH 1 = 3.40 l.

VISCOSITY GRADE

TRJ 75W - 80W

CHECKING THE LEVEL

Fill up to the level of the hole.



DESCRIPTION	COMPONENT CONCERNED
MOLYKOTE 33 Medium Part no.: 77 01 028 179	Control axis half-moons
LOCTITE FRENBLOC	Brake calliper mounting bolt

Parts to be replaced systematically

- Parts to be replaced when they have been removed:
- the self-locking nuts,
 - the gaskets,
 - the rubber seals.

Hydraulic unit oil

The oil level must be checked during each service: to top up, see the **Reservoir** section.

OIL SPECIFIED:

ELF RENAULTMATIC D3 SYN (to be ordered from ELF) Standard DEXRON III.

CAPACITY IN LITRES:

Hydraulic unit total volume: **0.6 l.**

A sequential gearbox is an automated manual gearbox. Clutch engaging and disengaging and gear changing are controlled by a specific computer.

Thus, the clutch pedal disappears, gear selection is controlled by an electric switch lever and the accelerator pedal is electrically linked to the engine via the computer.

Gear change time is minimised and ensures the comfort of the vehicle occupants.

MAINTENANCE: (to be performed systematically whenever the vehicle is in the workshop).

Check:

- the hydraulic fluid level (see the **Reservoir** section),
- operation of horn:
 - apply the handbrake,
 - start the vehicle,
 - select a gear (indicated by the letter "A" on the control panel),
 - open one of the front doors.

The horn should sound.

NOTE: do not depress the brake pedal, which cuts out the horn.

- for the security device preventing the start of gearbox operation to be triggered:
 - apply the handbrake,
 - select a gear (do not depress the brake pedal),
 - attempt to start the engine.

The starter should not work.

TOWING:

If the gearbox is stuck in gear:

- switch on the ignition,
- depress the brake pedal,
- select neutral,
- check that the gearbox is in neutral (e.g. by pushing the car).

If neutral gear cannot be engaged, the vehicle will have to be towed with the front wheels raised.

Always switch the engine off before towing a vehicle.

IMPORTANT:

SEQUENTIAL GEARBOX

Clean the hydraulic unit using compressed air and a cleaning product before attempting any operations on it.

Never leave the circuit open and never use a high pressure cleaner.

MOTORISED THROTTLE

Under no circumstances should the throttle body be opened or removed.

SEQUENTIAL GEARBOX COMPUTER

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

HYDRAULIC UNIT

Dump the pressure in the accumulator before attempting any operations.

When removing the hydraulic unit, make sure the assembly is removed without twisting the high pressure pipes.

21B



- 21B-5

The hydraulic unit fitted on the gearbox consists of two actuators:

- one actuator for gear selection and change,
- one actuator for engaging the clutch and the hydraulic power unit.

The assembly is linked to the sequential gearbox computer and the engine computer.

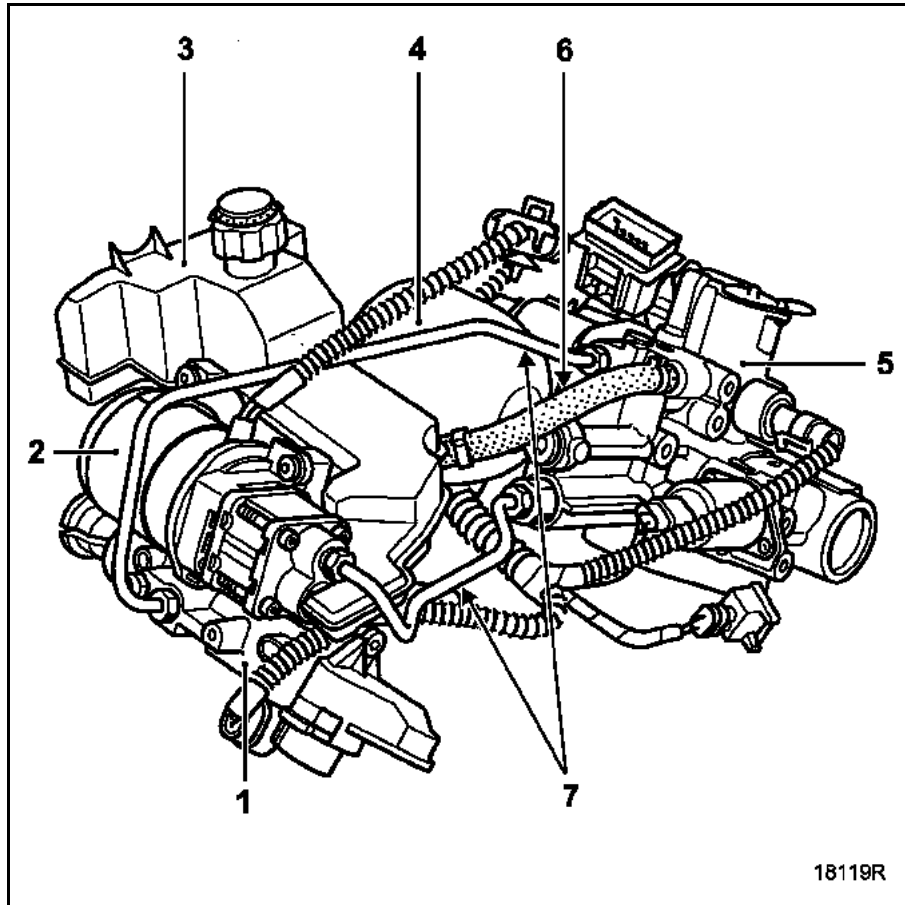
The gear is selected at the gear lever:

- in automatic mode, gear changes are controlled by the computer according to autoadaptive rules,
- in manual mode, the driver shifts the lever to send a signal to the computer, which then implements the gear change.


When changing gear, the sequential gearbox computer controls the engine torque so as to reduce jolts, leaving the driver free to leave his foot on the accelerator.

The automatic mode used by the sequential gearbox is based on the design of the DP0 automatic gearbox which uses rules which adapt automatically to the driving style and road conditions.

The sequential gearbox uses an electrohydraulically controlled conventional manual box, providing, as a result, an automatic 5-speed manual box.



- 1 Clutch actuator
- 2 Pump
- 3 Reservoir
- 4 Accumulator
- 5 Actuator module
- 6 Low pressure pipe
- 7 High pressure pipes

TIGHTENING TORQUES (in daNm)		
Pump assembly M8 bolts	2.4	
Pump assembly M10 bolts	4.4	
Actuator module nuts	2.1	
Bolt for mounting the left-hand suspended mounting on the body	2.1	
Bolt for mounting the suspended mounting on the engine	6.2	

NOTE: discharge the accumulator using the diagnostic tool, before attempting any operations on the sequential system (see the Accumulator section).

REMOVAL

Accessing the hydraulic unit

Put the vehicle on a two-post lift.

Before the hydraulic unit can be accessed, remove:

- the battery,
- the sequential box computer from its location,
- the wiring harnesses attached to the battery protective screen,
- the battery protective screen,
- the air unit and its sleeve,
- the expansion bottle from its location.

Removing the hydraulic unit from the gearbox

Fit engine lifting tool **Mot. 1453** and support the gearbox mounting.

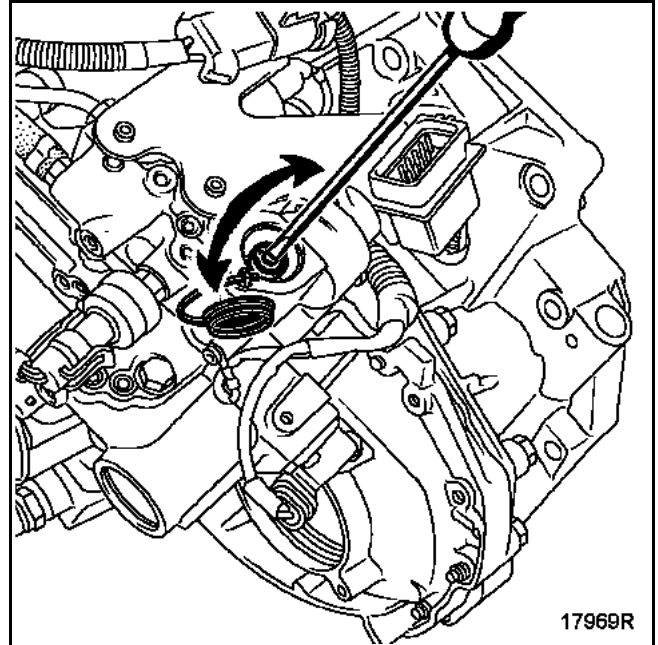
Remove the gearbox mounting rubber pad.

Disconnect:

- the gearbox speed sensor,
- the wiring harness towards the computer,
- the clutch fork cable.

Remove the control shaft closure panel.

Unlock the selector shaft by turning one quarter turn:
– slot aligned with the mark: the shaft is locked,
– slot perpendicular to the mark: the shaft is unlocked.



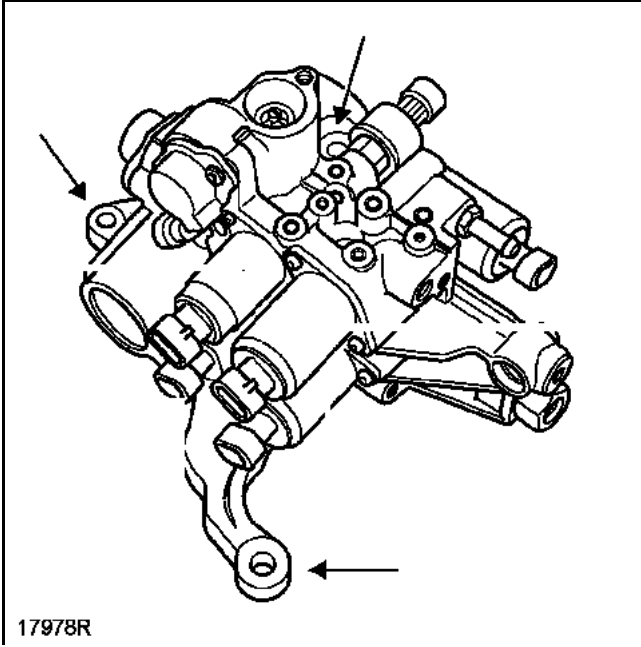
Unlocked selector shaft.

SEQUENTIAL GEARBOX

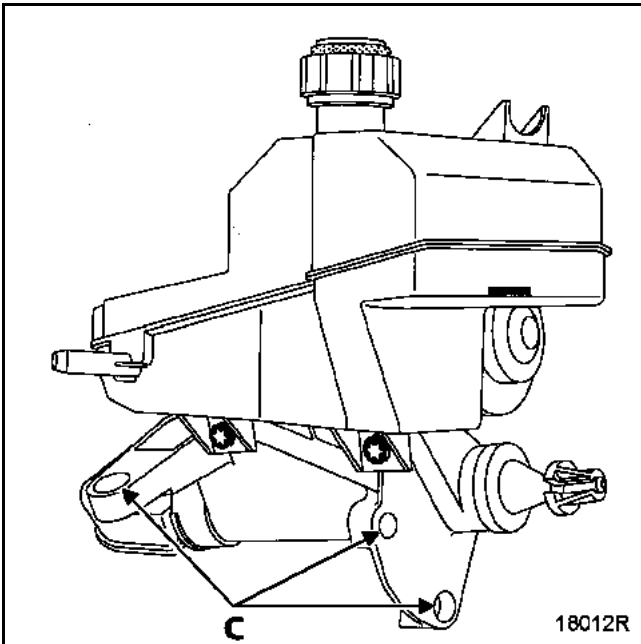
Hydraulic unit

21B

Loosen the three nuts module actuator side.



Loosen the three bolts of the pump assembly (C).



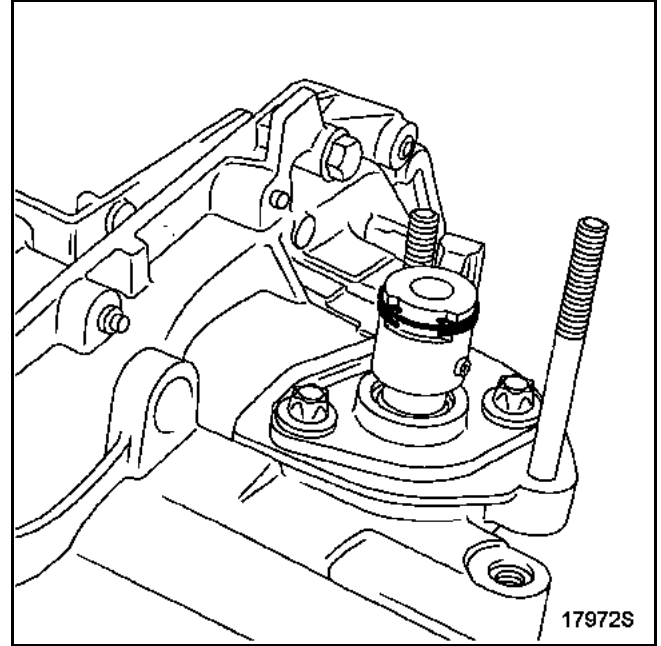
Remove the hydraulic unit.

IMPORTANT: only high pressure pipes can keep the hydraulic unit rigid: take care not to crush them when performing the operation.

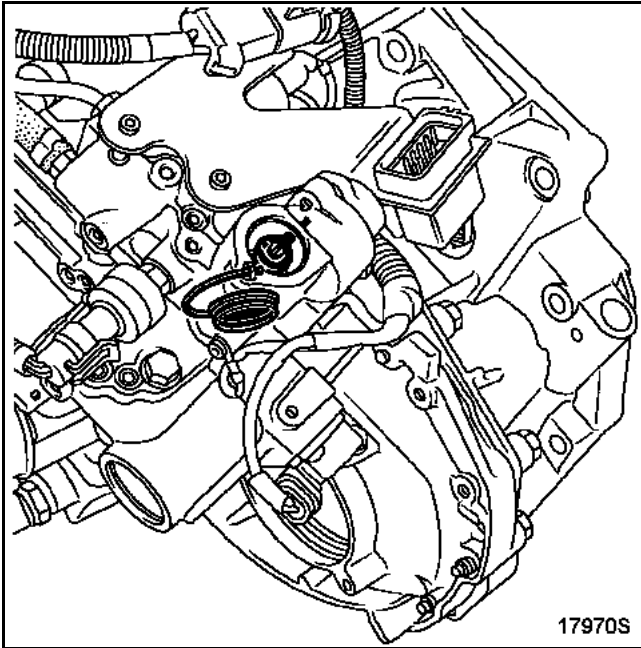
REFITTING

Check that the half-moons are positioned correctly.

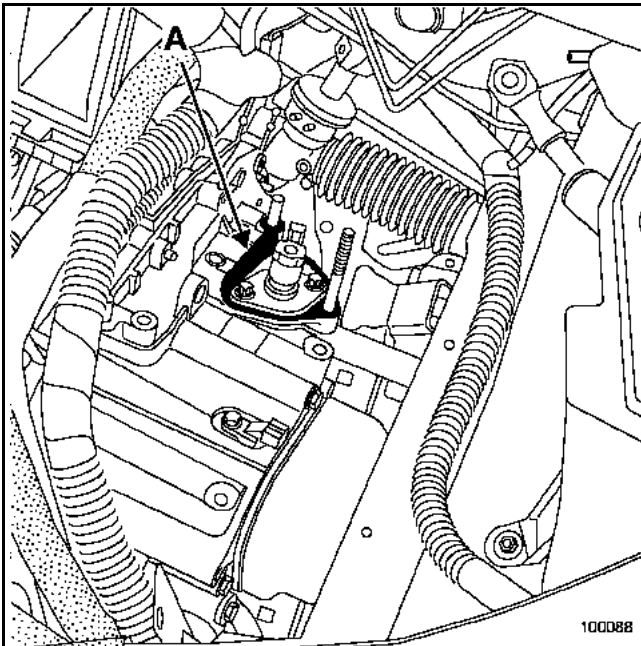
Coat the two half moons with **MOLYKOTE type 33 Medium**.



Lock the selector shaft on the hydraulic unit by aligning the slot and the mark, place the selector shaft in the upper position using a clip.

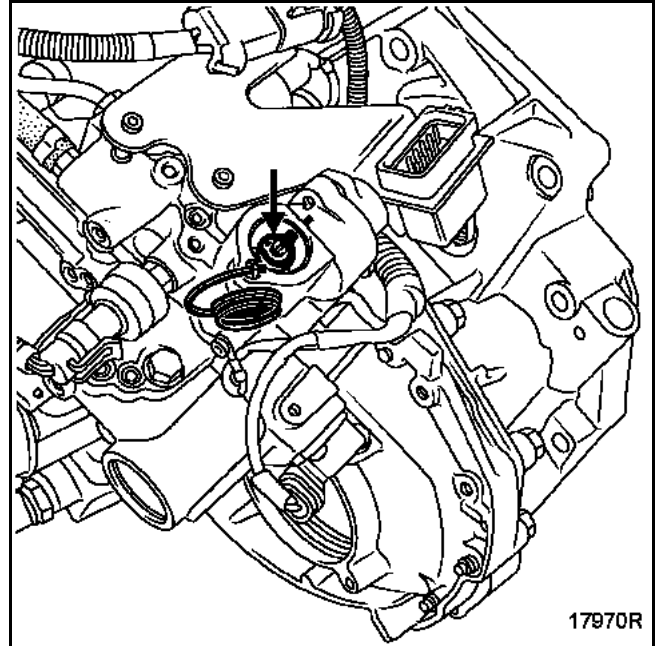


Refit the hydraulic unit onto the gearbox, keeping gasket (A) in place.



Torque tighten the nuts and bolts mounting the hydraulic unit on the gearbox.

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



Refit the selector shaft closure panel.


Proceed in the reverse order to removal.

Torque tighten.

Fill and top up the reservoir (see the **Reservoir** section).

Finishing refitting

See the **Special notes for replacing system components** section, HYDRAULIC UNIT KIT.

TIGHTENING TORQUES (in daNm)	
Lifting eye mounting	2.1
Accumulator	4

OPERATION

The accumulator allows the pump to function intermittently: when completely charged, gears may be changed three times with the clutch engaging and disengaging.

Nominal operating pressures:

- at 20°C: from 44 to 55 bar,
- at -30°C: from 32 to 39 bar.

NOTE: discharge the accumulator using the diagnostic tool, before attempting any operations on the sequential system.

Discharge the accumulator using the command: **pressure accumulator discharge (AC081)**.

The buzzer sounds to indicate that procedure has been completed.

To confirm the drop in pressure, read parameter **PR018 hydraulic pressure** to know the resulting value.

If there is still pressure in the accumulator, repeat the **pressure accumulator discharge** control procedure until the pressure is negligible and will not pose a risk when the high pressure pipes are removed.

The pressure reading must be close to **zero**.

REMOVAL

Accessing the accumulator

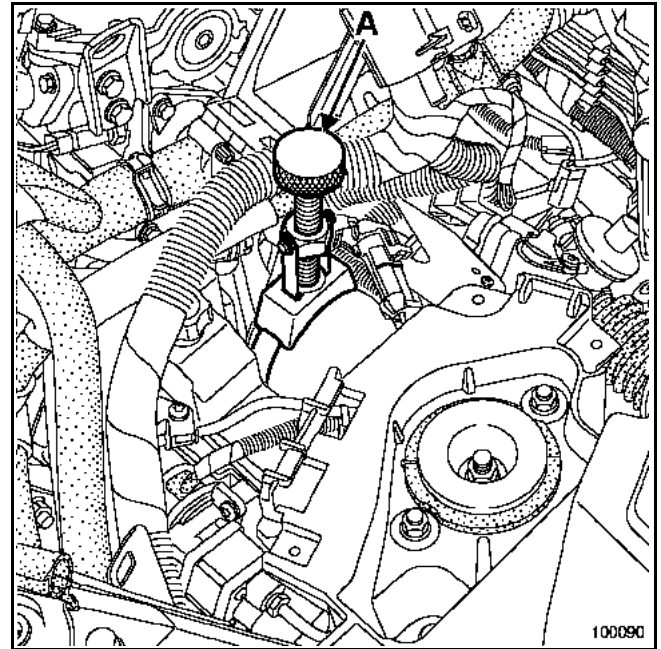
Before the accumulator can be accessed, remove:

- the battery,
- the sequential box computer from its location,
- the wiring harnesses attached to the battery protective screen,
- the battery protective screen.

Removing the accumulator

Remove the lifting eye mounting.

Remove the accumulator, using tool **Mot. 445 (A)**.



REFITTING

Stick the safety label on the accumulator.

To torque tighten the accumulator, tighten until the bolt comes into contact then gently tighten to torque.

Proceed in the reverse order to removal.

Fill and top up the reservoir (see the **Reservoir** section).


Finishing refitting

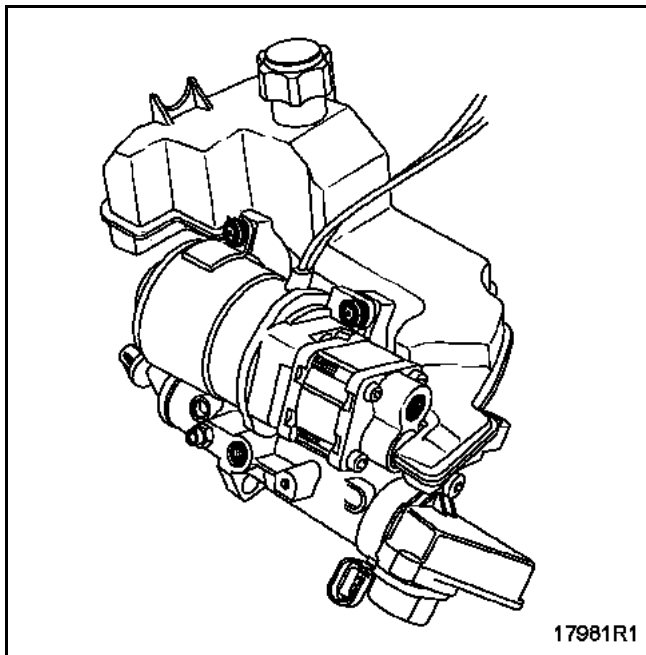
See the **Special notes for replacing system components** section, ACCUMULATOR.

SEQUENTIAL GEARBOX

Pump assembly

21B

TIGHTENING TORQUES (in daNm)		
Pump assembly M8 bolts	2.4	
Pump assembly M10 bolts	4.4	
High pressure pipe unions	1.4	
Bolt for mounting the left-hand suspended mounting on the body	2.1	
Bolt for mounting the suspended mounting on the engine	6.2	



NOTE: discharge the accumulator using the diagnostic tool, before attempting any operations on the sequential system (see the Accumulator section).

REMOVAL

Accessing the pump assembly

Put the vehicle on a two-post lift.

Before the pump assembly can be accessed, remove:

- the battery,
- the sequential box computer from its location,

- the wiring harnesses attached to the battery protective screen,
- the battery protective screen,
- the air unit and its sleeve,
- the expansion bottle from its location.

Drain the reservoir using a syringe.

Removing the pump assembly

Fit engine anchoring support **Mot. 1453** and support the gearbox mounting.

Remove the gearbox mounting rubber pad.

Disconnect the clutch fork cable.

Disconnect:

- the pump connector,
- the clutch position sensor connector,
- the earth connection on the pump assembly.

Remove:

- the high pressure pipes,
- the low pressure pipes,
- the three pump assembly mounting bolts,
- the pump assembly.

REFITTING

Proceed in the reverse order to removal.

Torque tighten.

Fill and top up the reservoir (see the **Reservoir** section).

TIGHTENING TORQUES (in daNm)	
M6 pump bolts	1
High pressure pipe unions	1.4

NOTE: discharge the accumulator using the diagnostic tool, before attempting any operations on the sequential system (see the Accumulator section).

REMOVAL

Accessing the pump

Put the vehicle on a two-post lift.

Before the pump can be accessed, remove:

- the battery,
- the sequential box computer from its location,
- the wiring harnesses attached to the battery protective screen,
- the battery protective screen,
- the air unit and its sleeve,
- the expansion bottle from its location.

Drain the reservoir using a syringe.

Removing the pump

Disconnect the pump/wiring harness connector.

Remove:

- the lower high pressure pipe,
- the three mounting bolts,
- the pump.

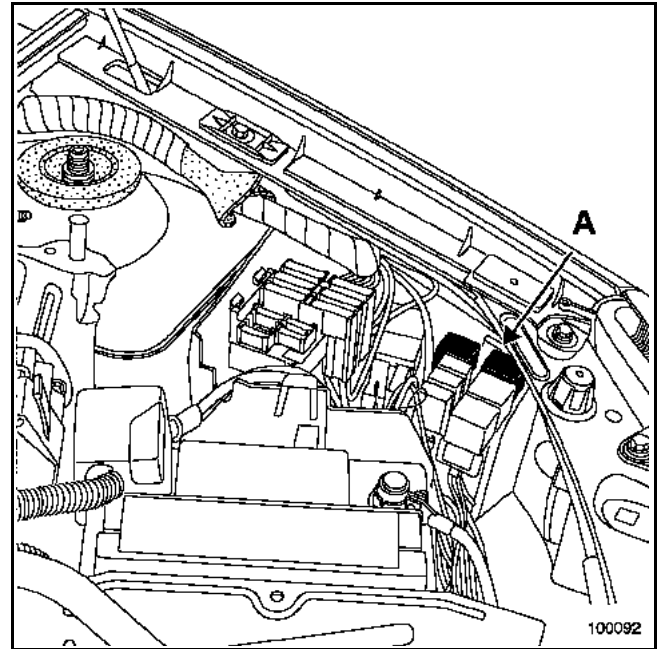
REFITTING

Proceed in the reverse order to removal.

Torque tighten.

WARNING: The sequential gearbox pump assembly relays must be replaced when the pump assembly is replaced.

The pump assembly relay (A) is located in the engine compartment connection unit.

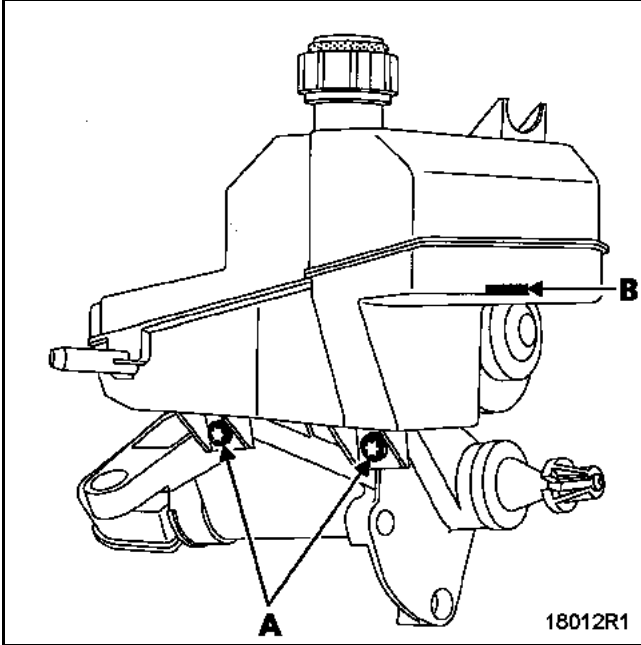


Fill and top up the reservoir (see the **Reservoir** section).

Finishing refitting

See the **Special notes for replacing system components** section, PUMP ONLY.

NOTE: discharge the accumulator using the diagnostic tool, before attempting any operations on the sequential system (see the **Accumulator** section).



REMOVAL

Accessing the reservoir

Remove the pump assembly following the procedure detailed in the **Pump assembly** section.

With the pump assembly removed, work on a work bench.

Removing the reservoir

Remove the two reservoir mounting bolts (A).

REFITTING

Proceed in the reverse order to removal.

Torque tighten.

Filling/topping up the reservoir

After the reservoir has been drained, fill it with **ELF RENAULTMATIC D3 SYN Dexron III** oil to between **32** and **38 mm** above the **MIN** mark.

After the accumulator has been fully pressurised (15 seconds after the ignition is switched on), the oil level will be at the **MIN** mark (B).

Finishing refitting

See the **Special notes for replacing system components** section, **RESERVOIR**.

SEQUENTIAL GEARBOX

Clutch cable

21B

NOTE: discharge the accumulator using the diagnostic tool, before attempting any operations on the sequential system (see the **Accumulator** section).

The clutch cable is integrated in the clutch module and controls the clutch fork.

REMOVAL

Accessing the clutch module

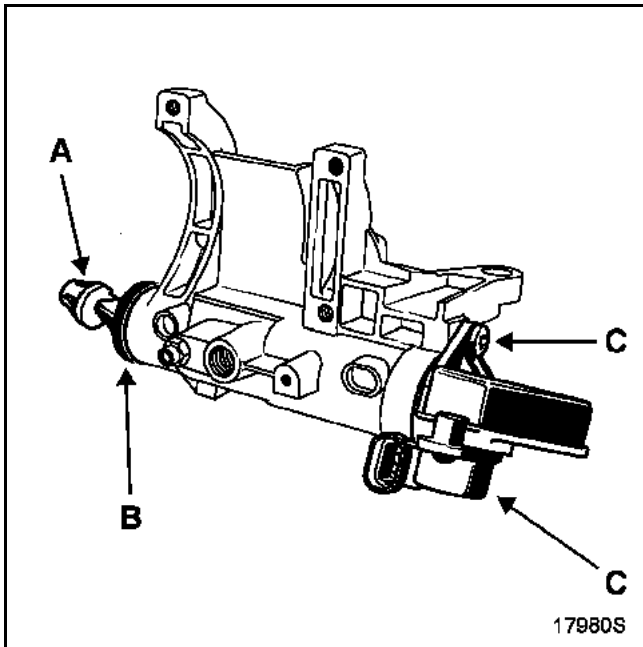
Remove the pump assembly following the procedure detailed in the **Pump assembly** section.

With the pump assembly removed, work on a work bench.

Removing the clutch cable

Remove:

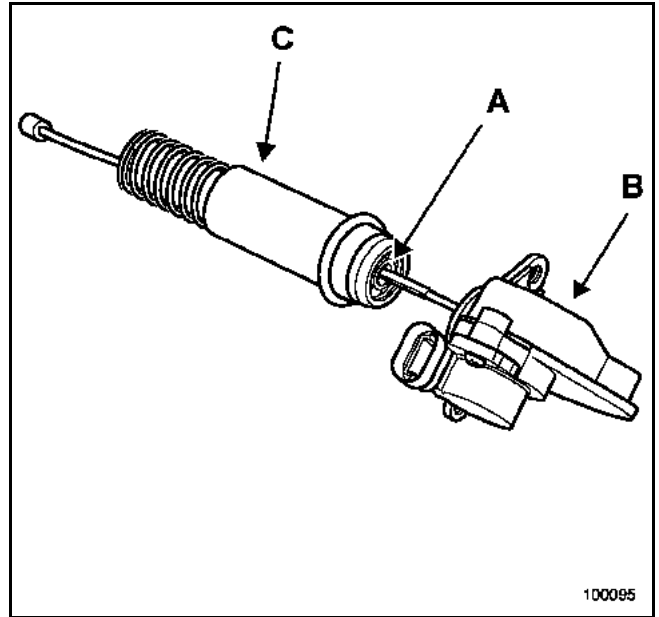
- sleeve stop (A),
- dust seal (B),
- the two bolts mounting the potentiometer onto clutch module (C).



Remove:

- the piston / spring assembly,
- the clutch module liner,
- the seal.

Unclip cross piece (A) with potentiometer (B) from piston / spring assembly (C).

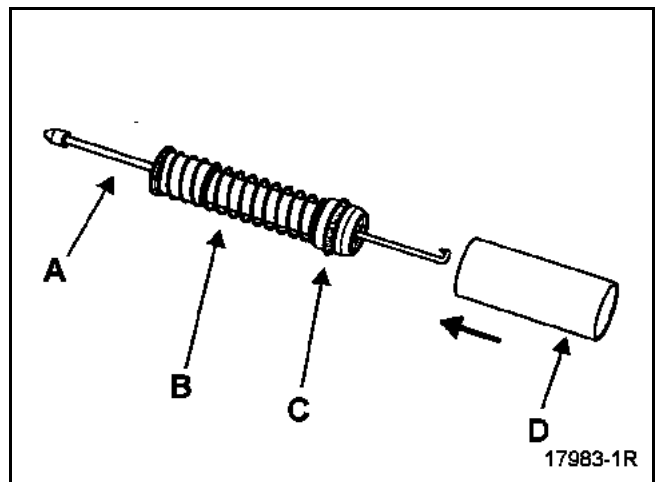


Remove the clutch cable.

REFITTING

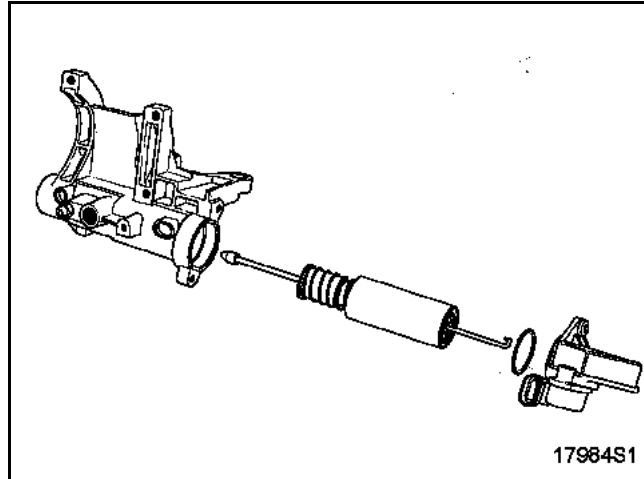
Refit:

- clutch cable (A) in the piston,
- the piston / spring assembly (B) in cylinder liner (D) observing the direction of fitting to avoid damaging lip seal (C),
- the seal.



Clip the cross piece onto the piston.

Fit the cylinder liner / piston assembly in the clutch module.



Refit:

- the sleeve stop,
- the dust seal,
- the two bolts mounting the potentiometer onto clutch module.

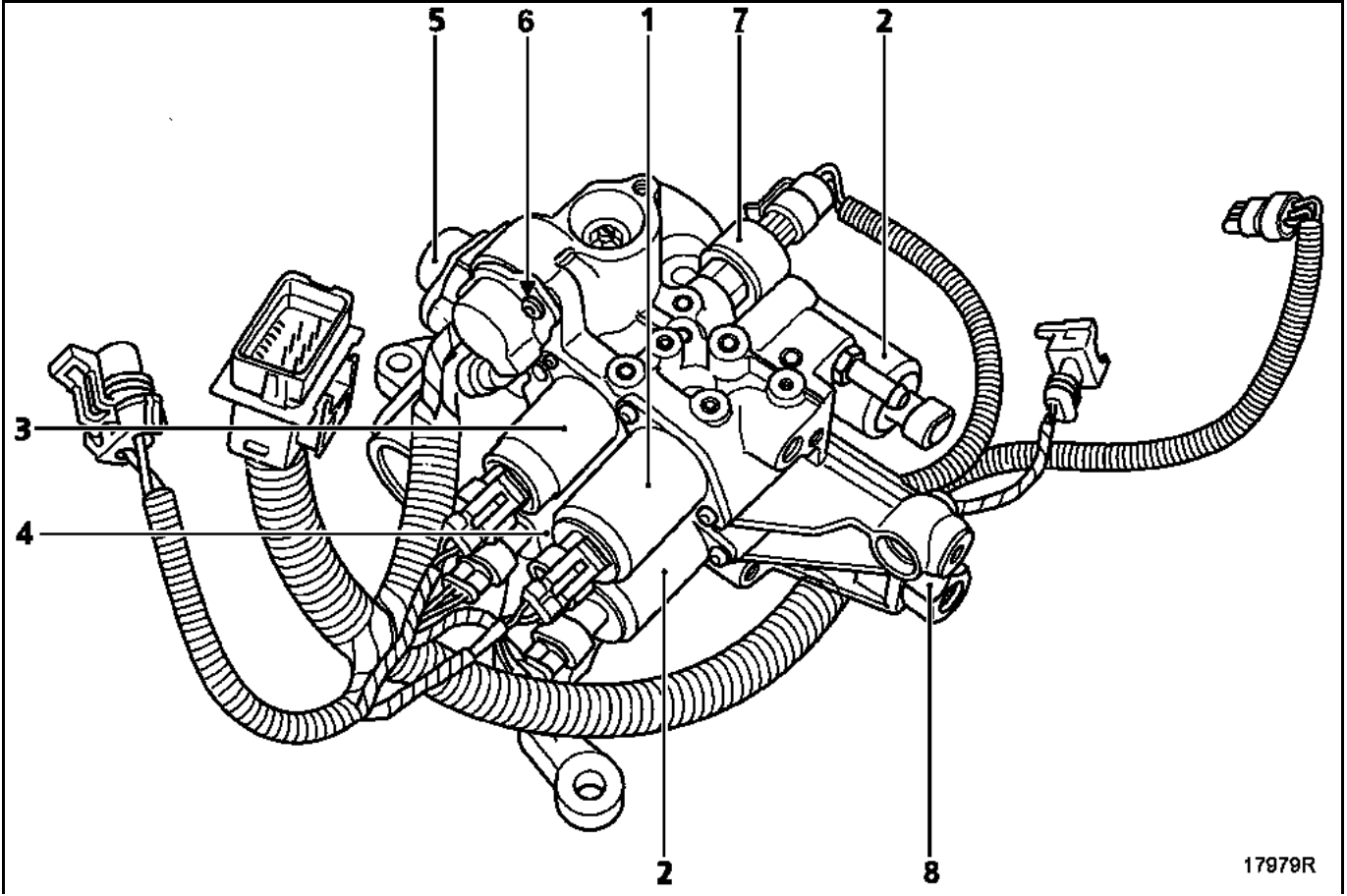
Proceed in the reverse order to removal.

Torque tighten.

Fill and top up the reservoir (see the **Reservoir** section).


Finishing refitting

See the **Special notes for replacing system components** section, CLUTCH CYLINDER.



17979R

- 1 Clutch operation solenoid valve
- 2 Engagement solenoid valves
- 3 Selection solenoid valve 2
- 4 Selection solenoid valve 1
- 5 Engagement position sensor
- 6 Selection position sensor
- 7 Pressure sensor
- 8 High pressure filter

TIGHTENING TORQUES (in daNm) 	
Actuator module nut	2.1
High pressure pipe unions	1.4
Bolt for mounting the left-hand suspended mounting on the body	2.1
Bolt for mounting the suspended mounting on the engine	6.2

NOTE: discharge the accumulator using the diagnostic tool, before attempting any operations on the sequential system (see the Accumulator section).

REMOVAL

Accessing the actuator module

To access the actuator module, remove the hydraulic unit (see the **Hydraulic unit** section).

Removing the actuator module

With the hydraulic unit removed, work on a work bench.

Disconnect:

- the clutch sensor connector,
- the pump connector,
- the pump module earth.

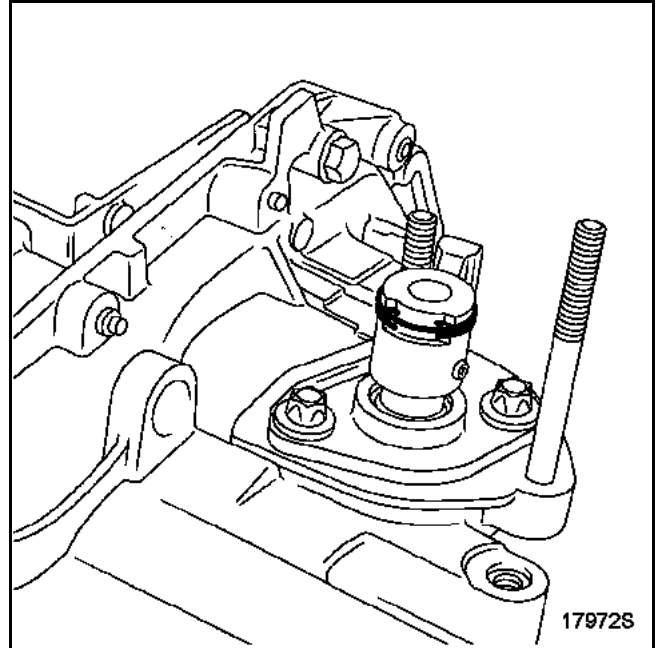
Remove:

- the high pressure pipes,
- the low pressure pipes,
- the actuator module.

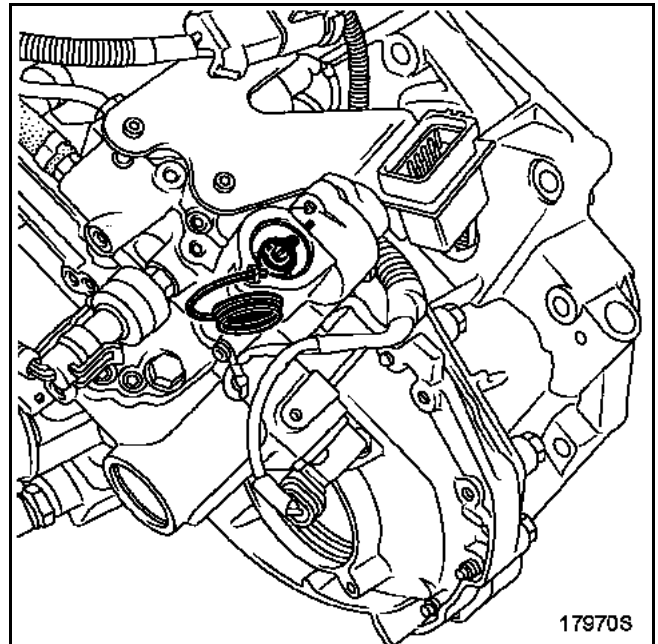
REFITTING

Check that the half-moons are positioned correctly.

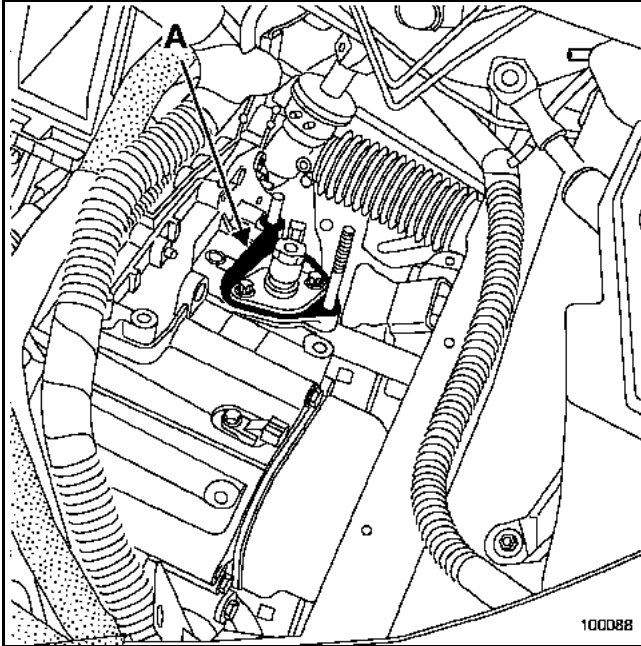
Coat the two half-moons with **MOLYKOTE type 33 Medium**.



Lock the selector shaft on the actuator module by aligning the slot and the mark, place the selector shaft in the upper position using a clip.

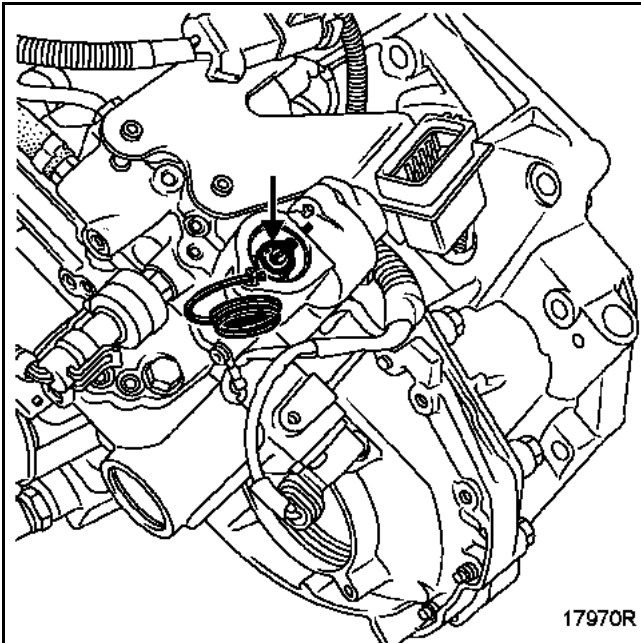


Refit the actuator module onto the gearbox, keeping new gasket (A) in place.



Torque tighten the nuts mounting the actuator module onto the gearbox.

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



Refit the selector shaft closure panel.

Proceed in the reverse order to removal.

Torque tighten.

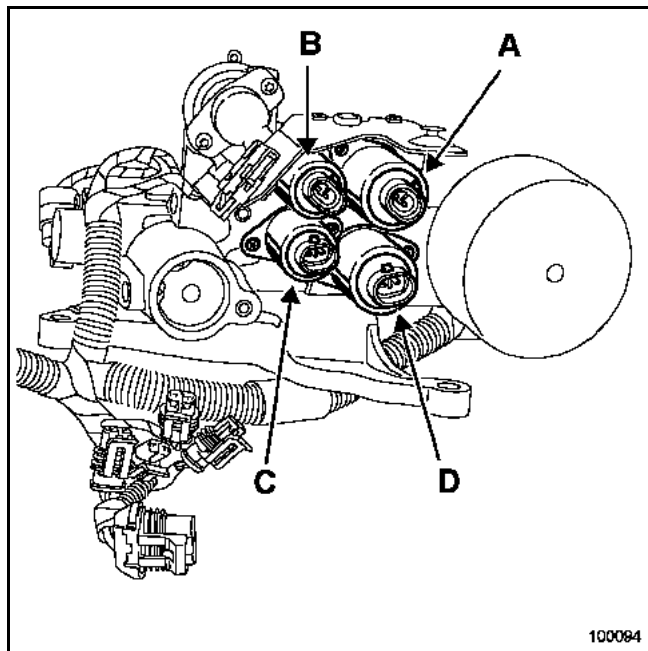
Fill and top up the reservoir (see the **Reservoir** section).

Finishing refitting

See the **Special notes for replacing system components** section, SELECTION CYLINDER/ENGAGEMENT CYLINDER.

NOTE: discharge the accumulator using the diagnostic tool, before attempting any operations on the sequential system (see the **Accumulator** section).

REMOVAL



- A** Clutch operation solenoid valve
- B** Selection solenoid valve 2
- C** Selection solenoid valve 1
- D** Engagement solenoid valve 1

Accessing the solenoid valves

Remove the actuator module following the procedure outlined in the **Actuator module** section.

With the actuator module removed, work on a work bench.

Removing the solenoid valves

Disconnect the solenoid valve connector concerned.

Remove the solenoid valve concerned by positioning the actuator module to one side.

REFITTING

Proceed in the reverse order to removal.

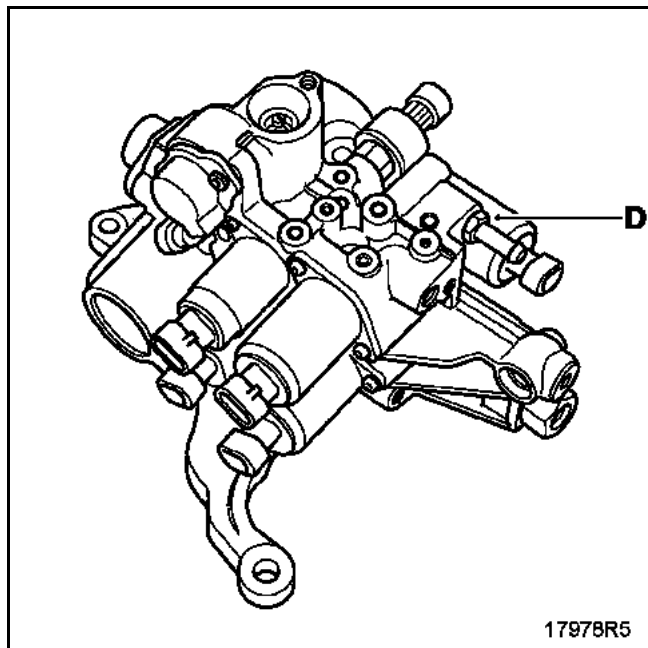
Torque tighten.

Fill and top up the reservoir (see the **Reservoir** section).

Finishing refitting

See the **Special notes for replacing system components** section, SELECTION SOLENOID VALVE/ENGAGEMENT SOLENOID VALVE.

Engagement solenoid valve 2



REMOVAL

NOTE: for this solenoid valve, the hydraulic unit does not have to be removed.

Accessing engagement solenoid valve 2

To access engagement solenoid valve 2, remove:

- the battery,
- the sequential box computer from its location,
- the wiring harnesses attached to the battery protective screen,
- the battery protective screen,
- the air unit and its sleeve,
- the expansion bottle from its location.

Removing engagement solenoid valve 2

Fit engine anchoring support **Mot. 1453** and support the gearbox mounting.

Remove the gearbox mounting rubber pad.

Disconnect the solenoid valve connector.

Remove the solenoid valve.

REFITTING

Proceed in the reverse order to removal.

Torque tighten.

Fill and top up the reservoir (see the **Reservoir** section).

Finishing refitting

See the **Special notes for replacing system components** section, ENGAGEMENT SOLENOID VALVE.

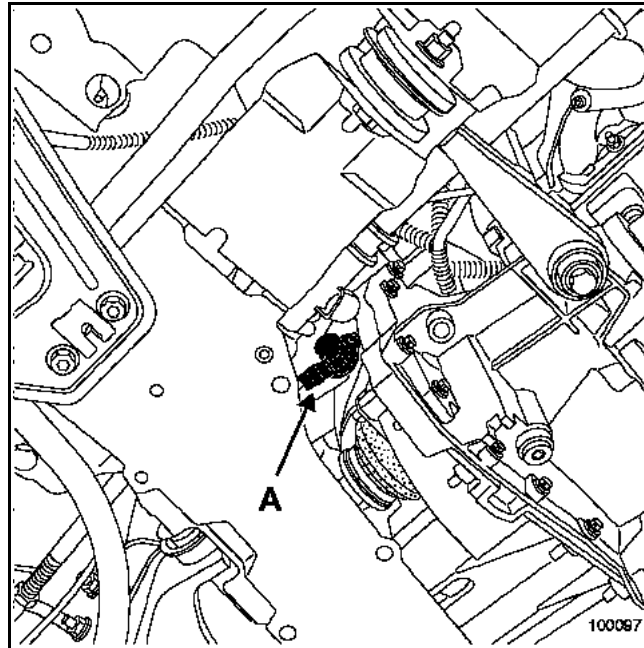
REMOVAL

Disconnect the battery.

Place the vehicle on a two-post lift, raise the lift and work under the vehicle.

Disconnect the clutch engagement position sensor connector (A).

Remove the sensor.



REFITTING

Proceed in the reverse order to removal.

IMPORTANT: before attaching the sensor, check that it can rotate clockwise on the shaft.

Finishing refitting

See the **Special notes for replacing system components** section, ENGAGEMENT POSITION SENSOR.

REMOVAL

NOTE: before starting the operation, select 1st gear and switch off the ignition.

Accessing the selection position sensor

Before the selection position sensor can be accessed, remove:

- the battery,
- the sequential box computer from its location,
- the wiring harnesses attached to the battery protective screen,
- the battery protective screen,
- the air unit and its sleeve,
- the expansion bottle from its location.

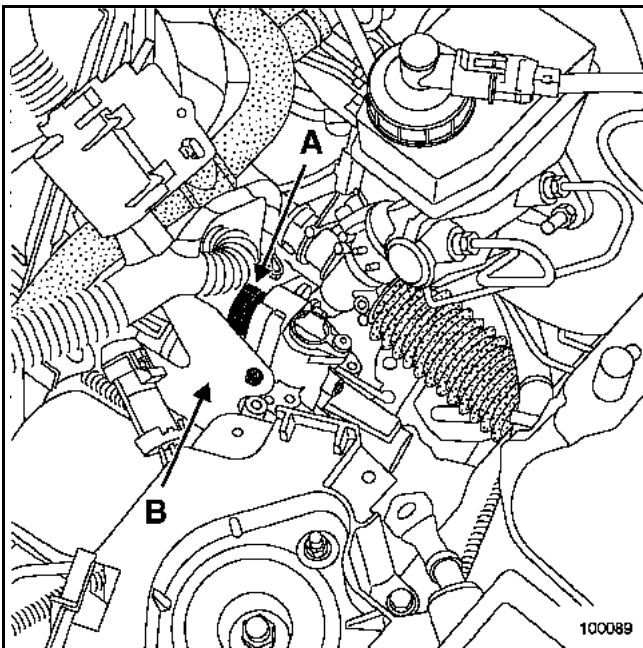
Removing the selection position sensor

ADVICE: place the vehicle on a two-post lift and work under the vehicle to disconnect and undo one section of the sensor.

Disconnect the selection position sensor connector.

Remove:

- solenoid cover plate (B),
- sensor (A).



REFITTING

Proceed in the reverse order to removal.

IMPORTANT: before attaching the sensor, check that it can rotate clockwise on the shaft.

Finishing refitting

See the **Special notes for replacing system components** section, SELECTION POSITION SENSOR.

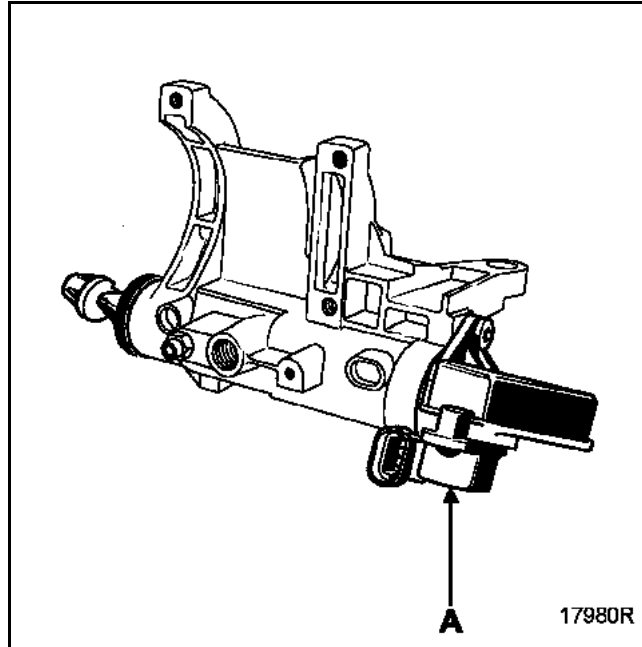
REMOVAL

Disconnect the battery.

Place the vehicle on a two-post lift, raise the lift and work under the vehicle.

Disconnect the clutch position sensor connector.

Remove sensor (A).



REFITTING

Proceed in the reverse order to removal.

IMPORTANT: before attaching the sensor, check that it can rotate clockwise on the shaft.

Finishing refitting

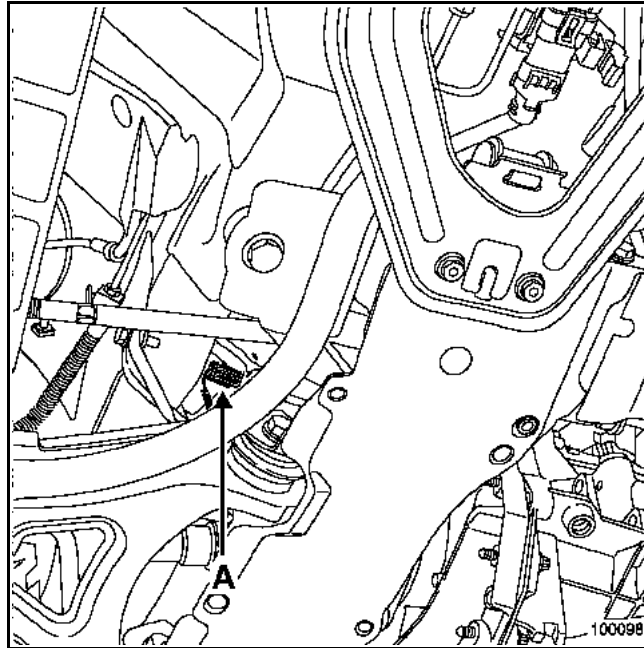
See the **Special notes for replacing system components** section, CLUTCH POSITION SENSOR.

REMOVAL

Disconnect the battery.

Place the vehicle on a two-post lift, raise the lift and work under the vehicle.

Disconnect pressure sensor connector (A).



Remove the sensor.

REFITTING

Proceed in the reverse order to removal.

Finishing refitting

See the **Special notes for replacing system components** section, PRESSURE SENSOR.

REMOVAL

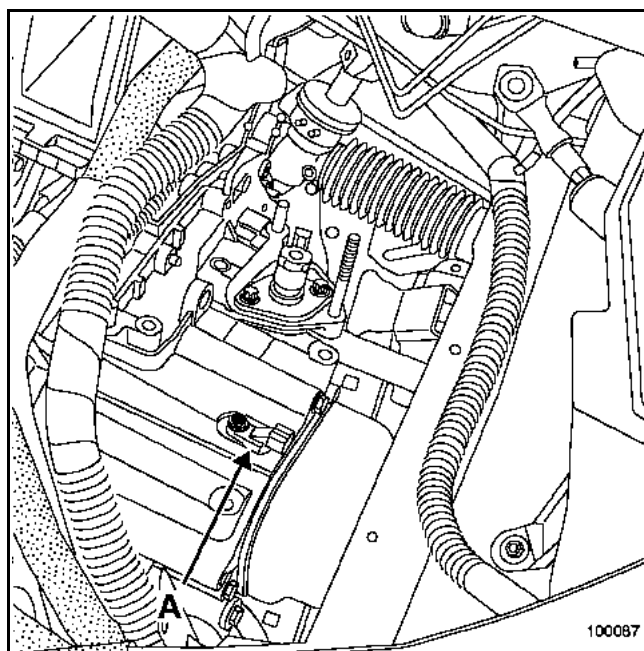
Accessing the gearbox speed sensor

Remove:

- the hydraulic unit following the procedure outlined in the **Hydraulic unit** section,
- the gearbox mounting base on the gearbox.

Removing the gearbox speed sensor

Remove sensor (A).



REFITTING

Proceed in the reverse order to removal.

Torque tighten.

IMPORTANT: when the gearbox speed sensor has been replaced, the vehicle must be driven to make the fault warning light go out and to reinitialise the computer memory.

SEQUENTIAL GEARBOX

Accelerator pedal potentiometer

21B

Vehicles fitted with a sequential gearbox have an accelerator pedal with a hard point at the end of travel (full load).

The accelerator pedal potentiometer is connected to the pedal by a linkage, which it is located on top of, on the pedal assembly.

REMOVAL

Disconnect:

- the battery,
- the potentiometer connector.

Disconnect the accelerator pedal connection control lever.

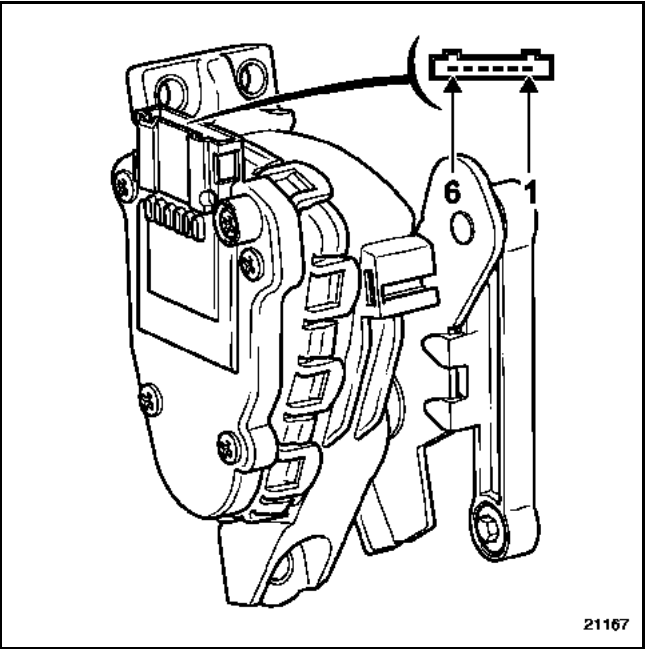
Remove the three mounting bolts from the potentiometer.


REFITTING

Proceed in the reverse order to removal.

Track allocation:

Track	Description
1	Track 2 earth
2	Track 1 earth
3	Track 1 signal
4	Track 1 supply
5	Track 2 supply
6	Track 2 signal



TIGHTENING TORQUES (in daNm) 	
Bolt for mounting the left-hand suspended mounting on the body	2.1
Bolt for mounting the suspended mounting on the engine	6.2
High pressure pipe unions	1.4

REMOVAL

Accessing the high pressure pipes

Before the high pressure pipes can be accessed, remove:

- the battery,
- the sequential box computer from its location,
- the wiring harnesses attached to the battery protective screen,
- the battery protective screen,
- the air unit and its sleeve,
- the expansion bottle from its location.

Removing the high pressure pipes

Fit engine anchoring support **Mot. 1453** and support the gearbox mounting.

Remove:

- the gearbox mounting rubber pad,
- the pipes.

REFITTING

Proceed in the reverse order to removal.

Torque tighten.

Fill and top up the reservoir (see the **Reservoir** section).

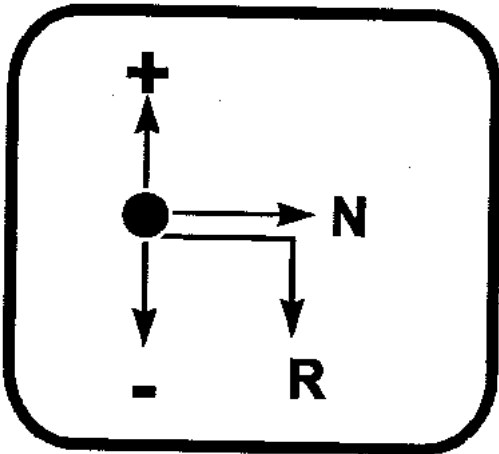
Finishing refitting

See the **Special notes for replacing system components** section, HIGH PRESSURE PIPE.

OPERATING PRINCIPLE

JoyStick gear levers have only one stable position.

All lever manoeuvres start from this position, also called STAND BY.

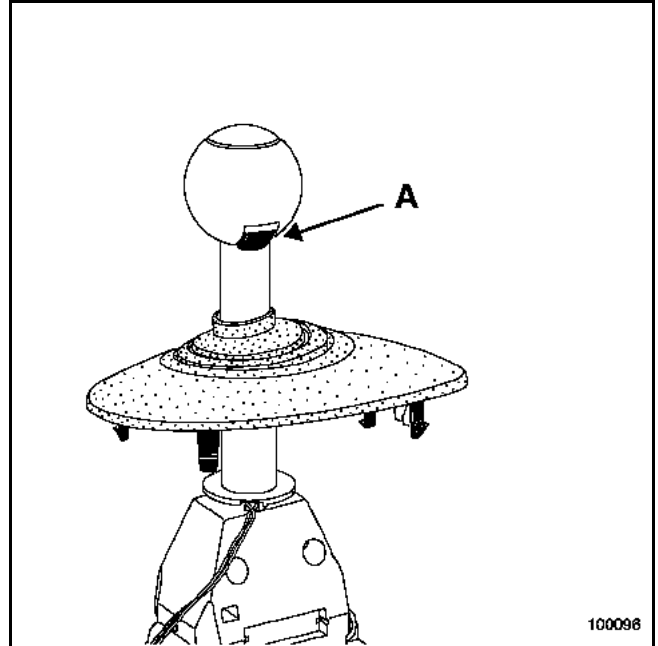


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- move the lever forwards (+): to change to a higher gear,
- move backwards (-): to change to a lower gear,
- move right (N): to change to neutral,
- move right and then backwards (R): to change to reverse.

Button (A) switches the automatic mode on or off, according to the driver's requirements.

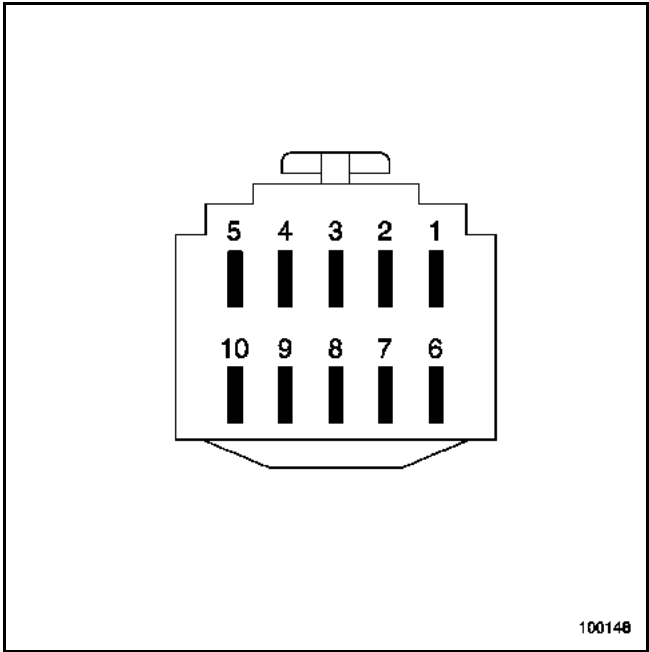
The gear selected is displayed on the instrument panel.



OPERATION

The gearbox is electrically controlled.

Contacts at the bottom of the control module send electronic signals to the gearbox computer when the gear lever position is changed.



Track	Description
1	Earth
2	Changing up signal
3	Earth
4	Not used
5	Not used
6	Changing down signal
7	Entering Automatic mode signal
8	Entering STAND BY mode signal
9	Changing to neutral signal
10	Not used

REMOVAL

Disconnect the battery.

Unclip:

- the gear lever console cover,
- the console front plate.

Disconnect the gear lever connector.

Remove the four bolts from the gear lever socket on the base plate.

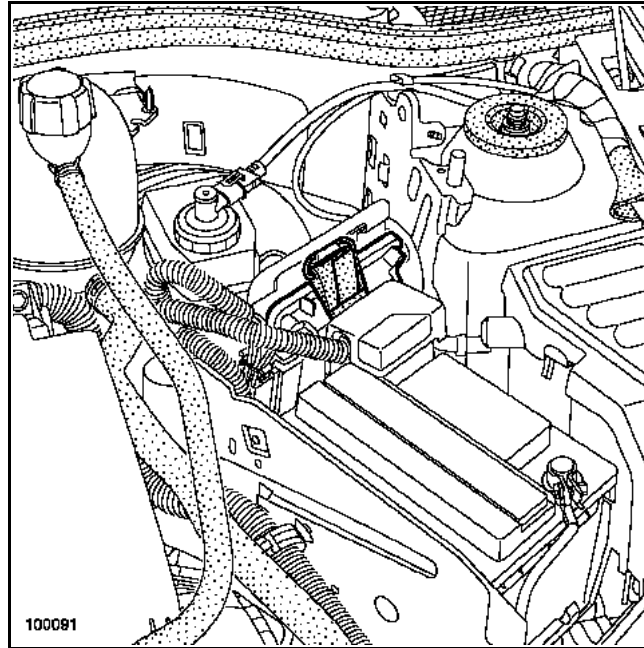
Remove the gear lever.

REFITTING

Proceed in the reverse order to removal.

LOCATION

It is located in the engine compartment, near to the battery.



The connector is split into two sections (52-track + 28-track).

REMOVAL - REFITTING

Switch off the ignition and disconnect the battery before operating on the computer.

IMPORTANT: perform Computer programming using the diagnostic tool when replacing the computer.

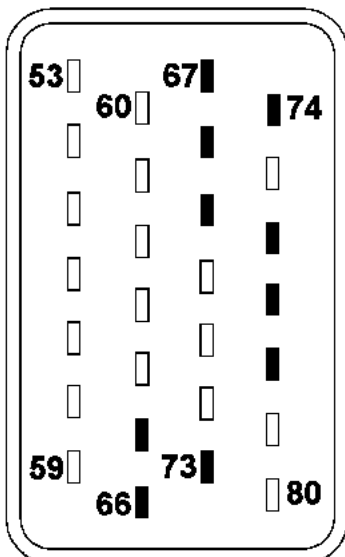
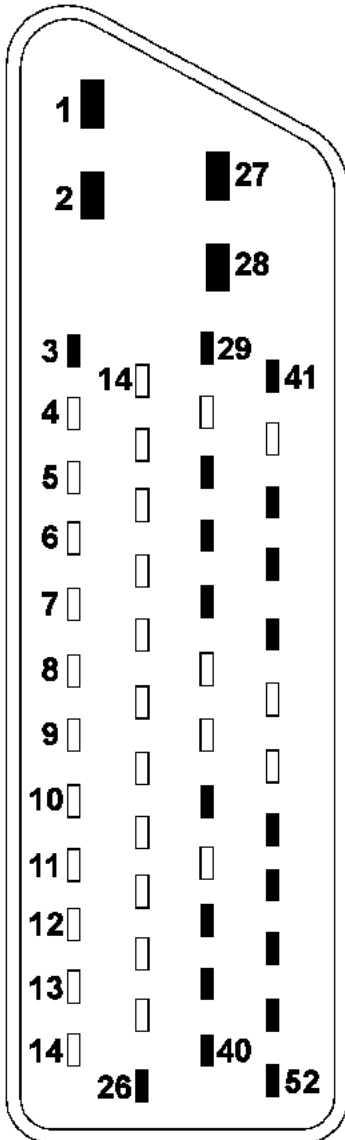
TRACK ALLOCATION

52-track connector

1	---	Power earth 1
2	---	Power earth 2
3	→	Selection solenoid valve 2 control
26	←	Changing up signal
27	---	+ Battery
28	---	+ After ignition
29	→	Selection solenoid valve 1 control
31	→	Pump assembly relay
32	→	Engagement solenoid valve 1 control
33	↔	Diagnostic socket: CAN L connection
36	←	Vehicle speed signal
38	←	Gearbox input speed sensor signal
39	←	Engagement position sensor signal
40	←	Pressure sensor signal
41	←	Reversing lights relay
43	→	Clutch solenoid valve control
44	→	Engagement solenoid valve 2 control
45	↔	Diagnostic socket: CAN H connection
48	←	Engine speed
49	↔	Diagnostic line K
50	←	Gearbox input speed sensor earth
51	←	Selection position sensor signal
52	←	Clutch position sensor signal

28-track connector

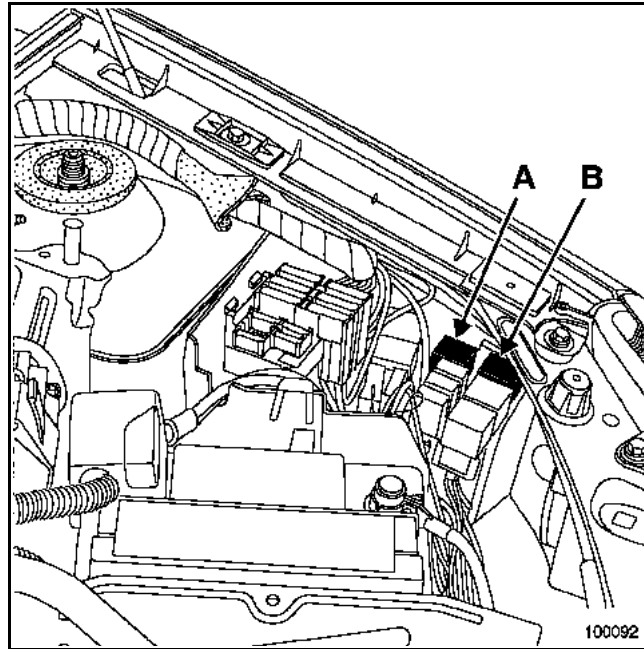
65	---	Gear lever switch earth
66	---	Sensor earth
67	←	Stable position signal (STAND BY)
68	←	Changing down signal
69	←	Brake pedal switch
73	→	Sensor supply (+ 5 V)
74	←	Changing to neutral signal
76	←	Starter motor key switch + signal
77	←	Automatic mode switch
78	←	Front door panel switch



LOCATION

The system has two relays integrated in the engine compartment connection unit:

- reversing lights relay (A),
- pump assembly relay (B).



A warning buzzer is integrated in the instrument panel: refer to Section 8.

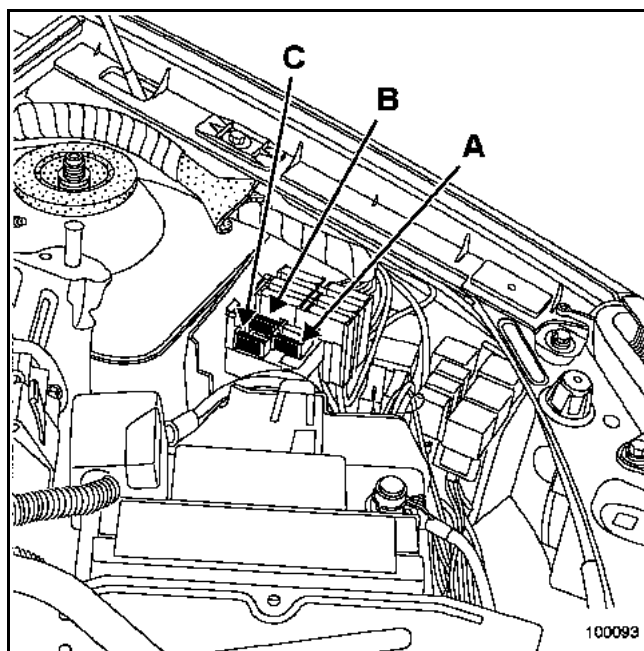
REMOVAL - REFITTING

Switch off the ignition and disconnect the battery before operating on the system.

LOCATION

The system is supplied through three intermediate fuses located in the engine compartment connection unit:

- the **5A** fuse (A) on the **+ After ignition** is connected to pin 28 of the sequential gearbox computer connector,
- the **20A** fuse (B) on the **+ Battery** is connected to pin 27 of the sequential gearbox computer connector,
- the **30A** fuse (C) on the **+ Battery** supplying the pump assembly.



REMOVAL - REFITTING

Switch off the ignition and disconnect the battery before operating on the system.

SEQUENTIAL GEARBOX

Wiring harness

21B

It is integrated in the hydraulic unit and unites the eleven connectors of the various system components.

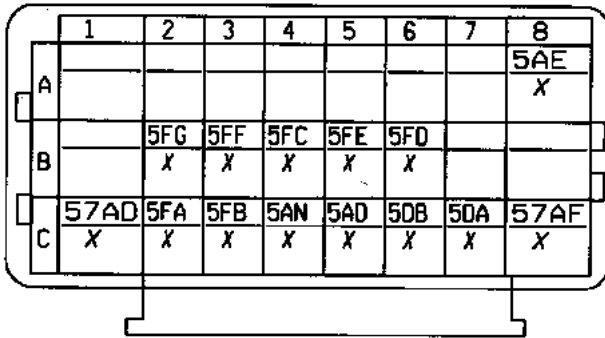
The earths of the five solenoid valves are united on one terminal strip, fixed on the hydraulic unit.

The pump unit earth is fixed to the clutch cylinder body.

The connection to the vehicle wiring harness is made through a 24-track connector located on top of the system.

ALLOCATION OF CONNECTOR TRACKS

Track		Allocation
A8	→	Pump control
B2	→	Clutch solenoid valve control
B3	→	Engagement solenoid valve 2 control
B4	→	Selection solenoid valve 1 control
B5	→	Engagement solenoid valve 1 control
B6	→	Selection solenoid valve 2 control
C1	---	Sensor earth
C2	←	Engagement position sensor signal
C3	←	Selection position sensor signal
C4	←	Clutch position sensor signal
C5	←	Pressure sensor signal
C6	---	Gearbox input speed sensor earth
C7	←	Gearbox input speed sensor signal
C8	→	Sensor supply (+ 5 V)



SE2040

ELECTRO-HYDRAULIC CLUTCH-GEARBOX UNIT KIT

- A) Switch on the ignition.
Ensure that there are no faults.
If necessary, clear the stored faults with the clearing command: **RZ001 Stored faults**.
- B) Clear all programming using the commands:
– **RZ002 Programming**
– **RZ003 Biting point programming**
– **RZ008 Initial closed position of clutch**
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer.
Check that the faults have been cleared with parameter: **PR010 Clutch wear = 0**.
Repeat the procedure if unsuccessful.
- C) Program the gears with the command **VP008 Programming the selection/engagement ranges**.
Wait for the procedure to end, exit diagnostic mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer.
Check that the programming has been successful with the following states:
– **ET061 Gears programming = OK**
– **ET063 Solenoid valve zero point programming = DONE**
– **ET064 Clutch position programming = DONE**
Repeat the procedure if unsuccessful.
- D) Engage all the gearbox gears checking that the display has recognised them.
- E) Shift the gear lever to neutral.
Start the engine.
Wait **10 seconds** without changing gear (to programme the clutch biting point).
Check that the programming has been successful with the following state: **ET0062 Biting point programming = DONE**.
Repeat the procedure if unsuccessful.
- F) With parameter **PR095 Clutch temperature** below **180°C** and **PR001 Coolant temperature** above **80°C**, set off under half load 5 or 6 times to program the progressiveness of the clutch.
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer.
Check that the programming has been successful with the following state: **ET065 Progressiveness programming = DONE** and check that parameter **PR096 Clutch progressiveness** varies.
Repeat the procedure if unsuccessful.
- G) If the clutch has been replaced, enter the replacement date using the command: **VP013 Enter new clutch fitting date**.
Check the data entered by using the identification parameter **ID024 Read new clutch fitting date**.
- H) Exit fault finding mode and switch off the ignition.

REPROGRAMMING THE COMPUTER

- A) Note down the value of parameters **PR147 New clutch initial closed position**, **PR010 Clutch wear** and the date in **ID024 Read new clutch fitting date** (if it is not 555555) from the computer that is to be replaced. Exit fault finding mode and switch off the ignition.
- B) Replace the computer.
- C) Program the gears with the command: **VP008 Programming the selection / engagement ranges**.
Wait for the procedure to end, exit diagnostic mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer. Check that the programming has been successful with the following states:
– **ET061 Gears programming = OK**
– **ET063 Solenoid valve zero point programming = DONE**
– **ET064 Clutch position programming = DONE**
Repeat the procedure if unsuccessful.
- D) Brake and select all the gears in the gearbox, while checking that they are indicated on the display panel.
- E) Shift the gear lever to neutral. Start the engine.
Wait **10 seconds** without changing gear (to programme the clutch biting point).
Check that the programming has been successful with the following state: **ET062 Biting point programming = DONE**.
Repeat the procedure if unsuccessful.
- F) With parameter **PR095 Clutch temperature** below **180°C** and **PR001 Coolant temperature** above **80°C**, set off under half load 5 or 6 times to program the progressiveness of the clutch.
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer.
Check that the programming has been successful with the following state: **ET065 Progressiveness programming = DONE** and check that parameter **PR096 Clutch progressiveness** varies.
Repeat the procedure if unsuccessful.
- G) Enter the value of the initial closed clutch position (taken from the old computer) using the command: **VP014 Enter initial closed clutch position**.
Check that the faults have been cleared with parameter: **PR010 Clutch wear = Value taken from the old computer**.
Enter the clutch replacement date (taken from the old computer) using command: **VP013 Enter new clutch fitting date**.
Check the data entered by using the identification parameter **ID024 Read new clutch fitting date**.
Repeat these procedures if unsuccessful.
- H) Exit fault finding mode and switch off the ignition.

ENGAGEMENT POSITION SENSOR / SELECTION POSITION SENSOR

- A) Switch on the ignition.
Ensure that there are no faults.
- B) Program the gears with the command: **VP008 Programming the selection / engagement ranges**. Wait for the procedure to end, exit diagnostic mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer. Check that the programming has successful with the following states:
 - **ET061 Gears programming = OK**
 - **ET063 Solenoid valve zero point programming = DONE**
 - **ET064 Clutch position programming = DONE**Repeat the procedure if unsuccessful.
- C) Brake and engage all gear ratios (there should be an OK message on the dashboard display).
- D) Exit fault finding mode and switch off the ignition.

CLUTCH POSITION SENSOR

- A) Switch on the ignition.
Ensure that there are no faults.
- B) Clear the programming with command: **RZ003 Biting point programming**. Exit fault finding mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer.
- C) Shift the gear lever to neutral.
Start the engine.
Wait **10 seconds** without changing gear (to programme the clutch biting point).
Check that the programming has been successful with the following state: **ET062 Biting point programming = DONE**.
Repeat the procedure if unsuccessful.
- D) Exit fault finding mode and switch off the ignition.

PRESSURE SENSOR

- A) Switch on the ignition.
Ensure that there are no faults.
- B) Bleed the hydraulic unit using command: **AC011 Bleed hydraulic pressure unit**.
Wait for the procedure to end (approximately **1 minute**).
- C) Exit fault finding mode and switch off the ignition.

SELECTION SOLENOID VALVE / ENGAGEMENT SOLENOID VALVE

- A) Switch on the ignition.
Ensure there are no faults
- B) Bleed the hydraulic unit using command: **AC011 Bleed hydraulic pressure unit**. Wait for the procedure to end (approximately **1 minute**).
Switch off the ignition.
- C) Brake and engage all gear ratios (there should be an OK message on the dashboard display).
Exit fault finding mode and switch off the ignition.

CLUTCH SOLENOID VALVE

- A) Switch on the ignition.
Ensure that there are no faults.
- B) Open the hydraulic unit bleed screw.
Bleed the clutch cylinder system using the command: **AC008 Clutch system phase 1 bleed**. Close the bleed screw as soon as the fluid begins to run clear of air bubbles.
Wait for the procedure to complete (this should take **6 minutes**).
- C) Bleed the clutch cylinder system using the command: **AC009 Clutch system phase 2 bleed**. Close the bleed screw as soon as the fluid begins to run clear of air bubbles.
Wait for the procedure to complete (this should take **8 minutes**).
- D) Bleed the hydraulic unit using command: **AC011 Bleed hydraulic pressure unit**.
- E) Wait for the procedure to end.
- F) Exit fault finding mode and switch off the ignition.

SELECTION CYLINDER / ENGAGEMENT CYLINDER / RESERVOIR / ACCUMULATOR / PUMP ONLY

- A) Switch on the ignition.
Ensure that there are no faults.
- B) Bleed the hydraulic unit using command: **AC011 Bleed hydraulic pressure unit**.
Wait for the procedure to end.
- C) Program the gears with the command: **VP008 Programming the selection / engagement ranges**.
Wait for the procedure to end, exit diagnostic mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer.
Check that the programming has been successful with the following states:
 - **ET061 Gears programming = OK**
 - **ET063 Solenoid valve zero point programming = DONE**
 - **ET064 Clutch position programming = DONE**Repeat the procedure if unsuccessful.
- D) Brake and engage all gear ratios (there should be an OK message on the dashboard display).
- E) Exit fault finding mode and switch off the ignition.

CLUTCH CYLINDER / FLUID LEAK DURING CLUTCH CABLE REPLACEMENT

- A) Switch on the ignition.
Ensure that there are no faults.
- B) Open the hydraulic unit bleed screw.
Bleed the clutch cylinder system using the command: **AC008 Clutch system phase 1 bleed**.
Close the bleed screw as soon as the fluid begins to run clear of air bubbles.
Wait for the procedure to complete (this should take **6 minutes**).
- C) Bleed the clutch cylinder system using the command: **AC009 Clutch system phase 2 bleed**.
Close the bleed screw as soon as the fluid begins to run clear of air bubbles.
Wait for the procedure to complete (this should take **8 minutes**).
- D) Clear the programming with command: **RZ003 Biting point programming**.
Exit fault finding mode and switch off the ignition.
Wait **1 minute** and resume dialogue with the computer.
- E) Shift the gear lever to neutral. Start the engine.
Wait **10 seconds** without changing gear (until the clutch biting point is programmed): **ET062 Biting point programming = DONE**.
Repeat the procedure if unsuccessful.
- F) Exit fault finding mode and switch off the ignition.

HIGH PRESSURE PIPE

- A) Switch on the ignition.
Ensure that there are no faults.
- B) Open the hydraulic unit bleed screw.
Bleed the clutch cylinder system using the command: **AC008 Clutch system phase 1 bleed**.
Close the bleed screw as soon as the fluid begins to run clear of air bubbles.
Wait for the procedure to complete (this should take **6 minutes**).
- C) Bleed the clutch cylinder system using the command: **AC009 Clutch system phase 2 bleed**.
Close the bleed screw as soon as the fluid begins to run clear of air bubbles.
Wait for the procedure to complete (this should take **8 minutes**).
- D) Exit fault finding mode and switch off the ignition.