

RENAULT

Technical Note 6511A

PKX, PFX, TL4, NDX, JBX, JCX, JHX, JR5

Sub-section concerned: 01E

Manual gearbox fault finding

All vehicles with PK4, PK5, PK6, PK7, PK9, PF1, PF6, TL4, JB0, JB1, JB2, JB3, JB4, JB5, JB9, JC5, JC7, JH1, JH3, JR5, ND0 manual gearboxes

Fault finding procedures for incorrect gear changes

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INTRODUCTION TO FAULT FINDING

Fault finding - Introduction

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1. SCOPE OF THIS DOCUMENT

This document presents the fault finding procedure applicable to all computers with the following specifications:

Vehicle(s): **All 2 wheel drive vehicles**
Function concerned: **Manual gearboxes**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):

- MR for the vehicle concerned.
- MR of the gearbox concerned:

*

Gearbox	Technical Note No.
PA6 - PK5 - PK6	Technical Note 6003A
TL4	Technical Note 6019A
JBX - JCX	MR-BV-JB-JC
PF6 - PK4	Technical Note 6021A
JA3, JH1, JH3, JR5	Technical Note 6029A
ND0	Technical Note 6034A

3. FAULT FINDING PROCEDURE

- Identify the type of gear change discrepancy using the definitions given (see definition of symptoms).
- Use the ALPs (fault finding charts) to identify the cause of the fault

4. SAFETY INSTRUCTIONS

Safety rules must be observed during any work on a component to prevent any damage or injury:

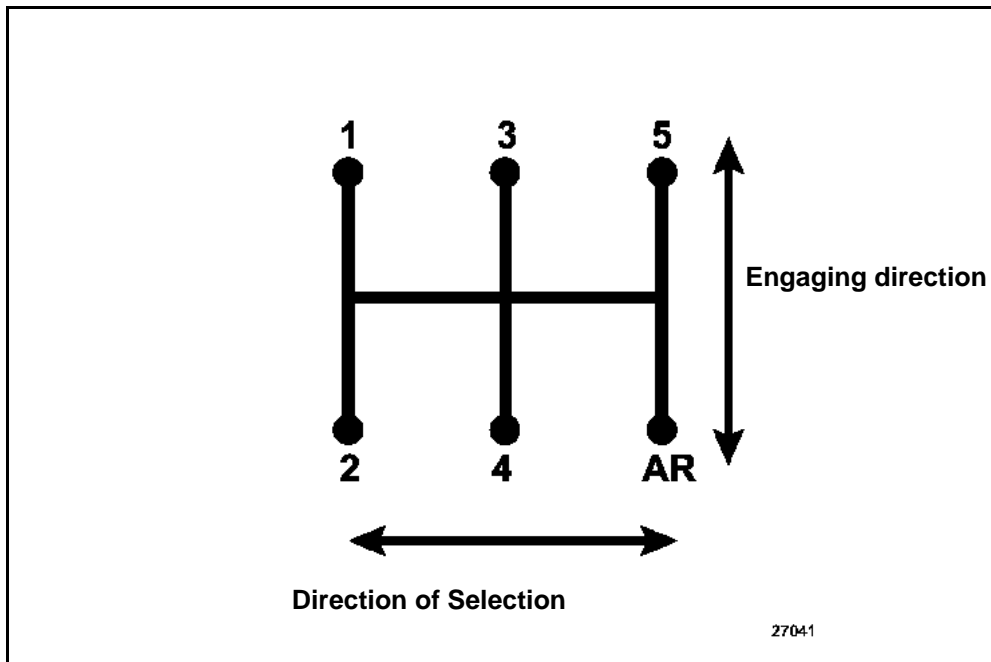
The road tests referred to in this document should be carried out in accordance with Road Traffic Regulations (speed limits must be obeyed).

IMPORTANT

When carrying out road tests, obey Road Traffic Regulations, especially speed limits.

It may be necessary to carry out the road test with the customer to observe the driving habits of the customer (insufficient movement when changing gear, clutch not disengaged sufficiently etc.). The fault stated by the customer is due to ignorance or unfamiliarity with the normal operation of the gearbox.

5. DEFINITION OF SYMPTOMS



A. Gear change hitch:

Definition:

One or several points of resistance felt when moving the lever which stop or at least slow down movement. It appears randomly with regard to the gear being selected and how often it appears.

Appearance context:

- More likely to appear when the gearbox is cold (aggravating factor), for example in the first few miles of a journey (not on the motorway).
- Gear change sticks when changing up or down a gear.

B. Gear jumps:

Definition:

One or several of the gears selected jumps out of gear without touching the control lever.

Appearance context:

Generally occurs in only one of the following cases:

- at a stable engine speed,
- when accelerating
- when decelerating
- when lifting off the accelerator.

Note: the gear may jump in inverse proportion to torque or at a stable engine speed.

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Fault finding - Introduction

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C. Hard or impossible to engage a gear (gear selected)

Definition:

Temporary difficulty in engaging a gear or impossible to do so.

Appearance context:

When engaging the gear, having already selected the gear (when all conditions making it possible for the gear to be engaged are present: clutch disengaged, gear selected, etc.).

D. Gear control blocked or inoperative:

Definition:

Impossible to engage or disengage a gear on one or several lines (as soon as the action begins and in the direction of selection) or with the gear engaged, the vehicle acts as though it is still in neutral.

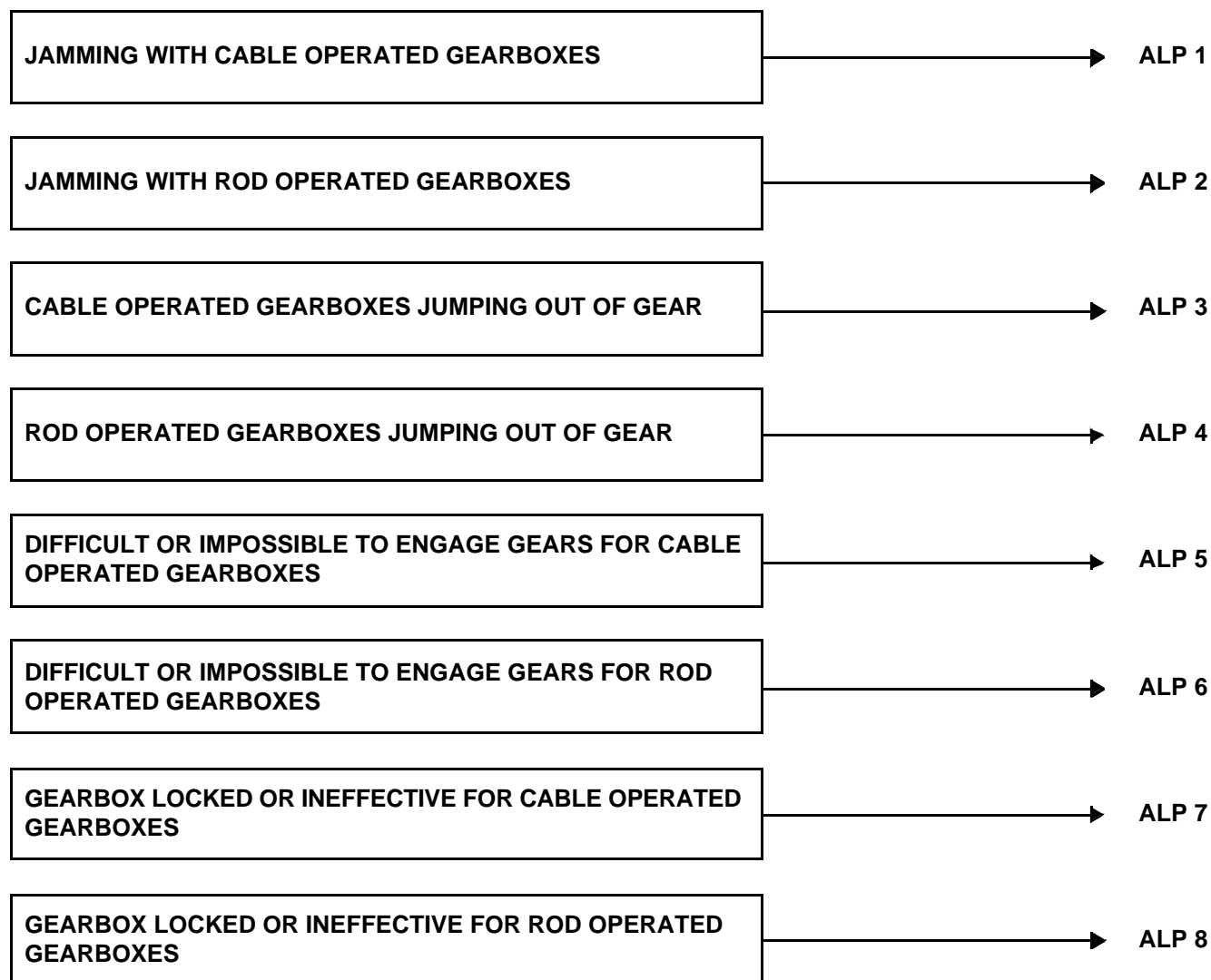
Appearance context:

All conditions making it possible for the gear to be engaged are present: clutch disengaged, gear selected, etc.

INTRODUCTION TO FAULT FINDING

Fault finding - Customer complaints

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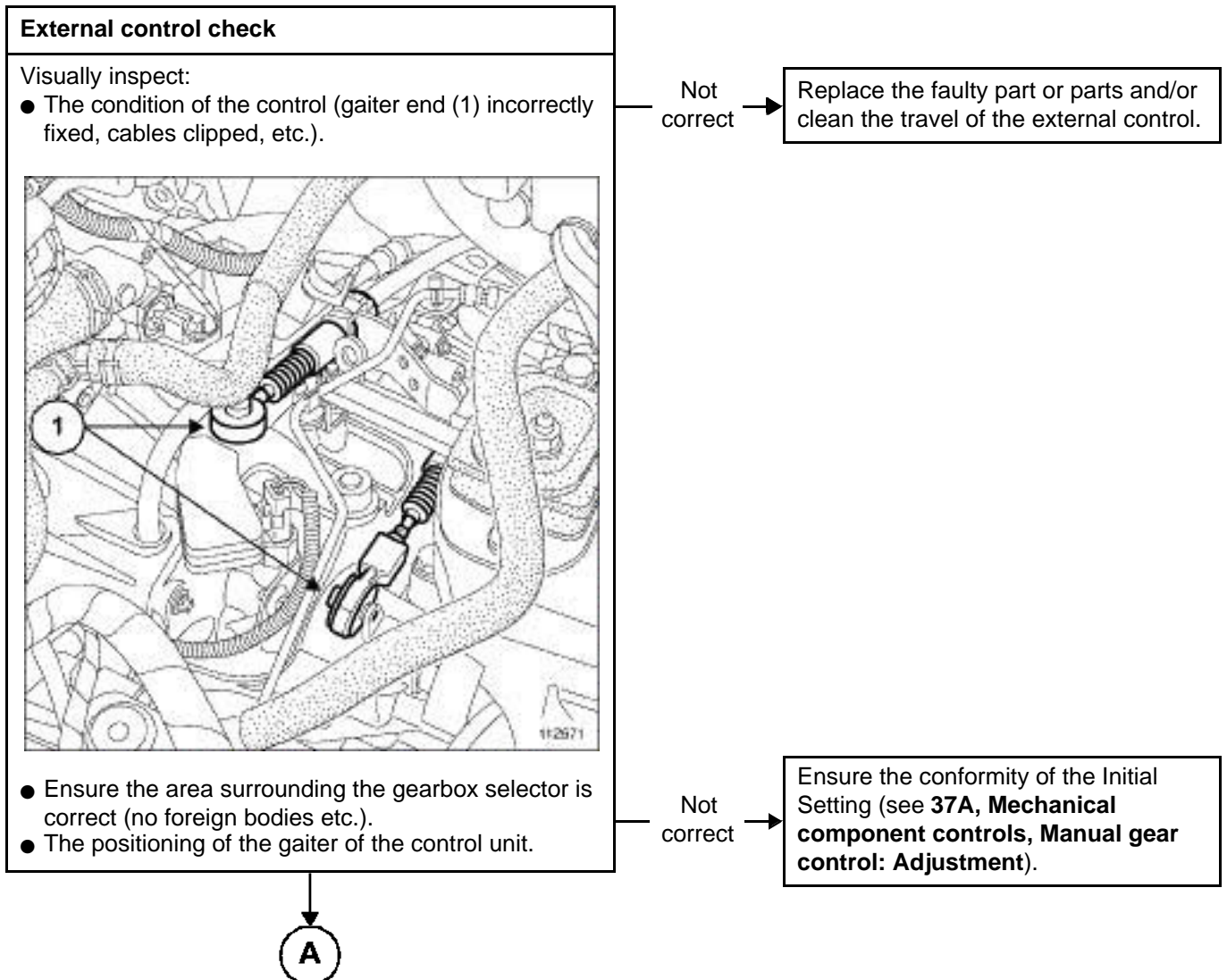
INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

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ALP 1	Jamming with cable operated gearboxes
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NOTES	<ul style="list-style-type: none">– Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.– Check that the clutch pedal travel is not obstructed by the floor carpet.– If there is jamming in 2nd AND 3rd with the ND gearbox: see Technical Note 4559A, gears jamming when engaging 2nd or 3rd gear.– The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.
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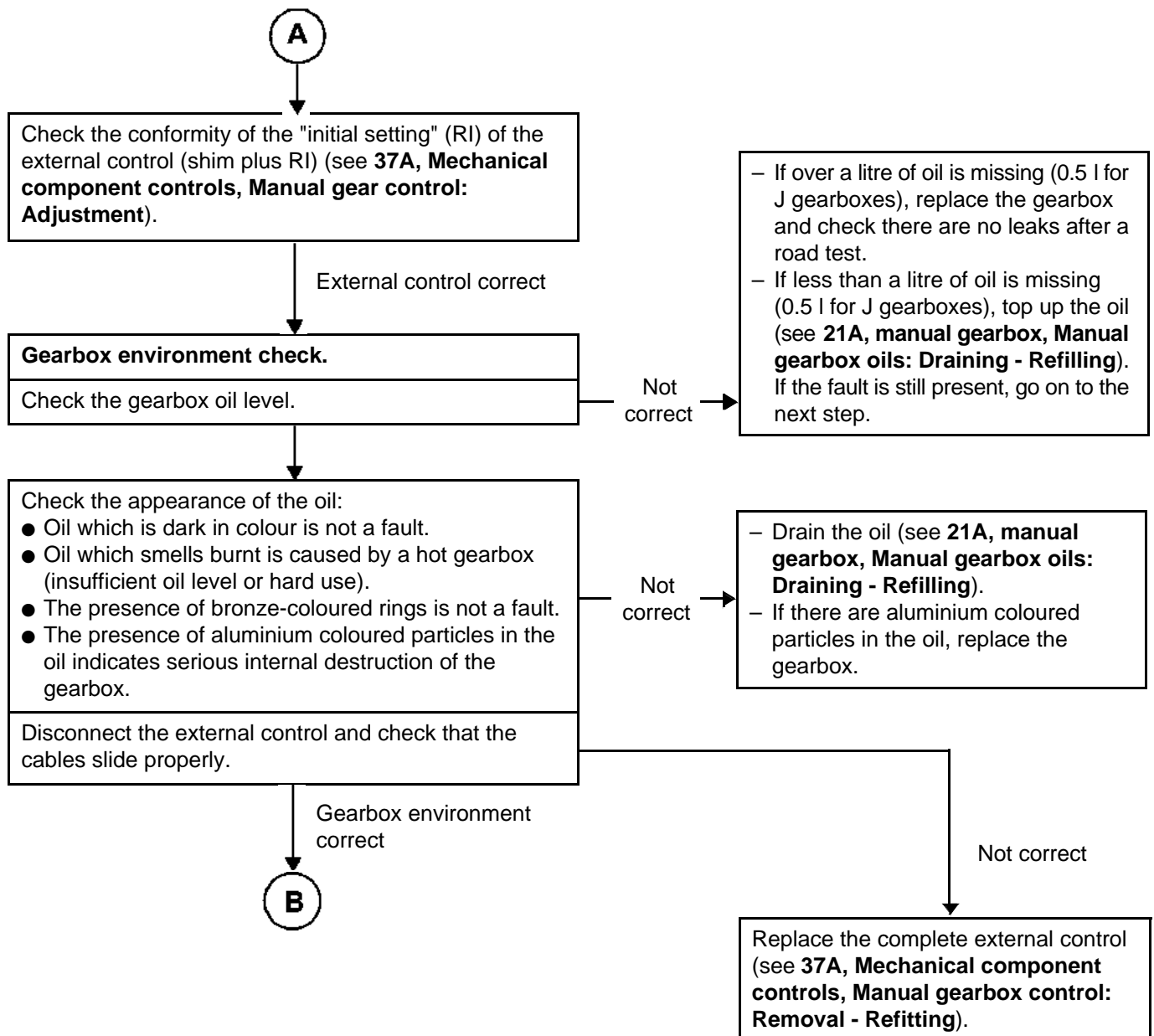


INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

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ALP 1 CONTINUED 1



ALP 1
CONTINUED 2

B

Clutch check

Check that the clutch operates correctly (see **MR-394, 20A, Clutch, Fault finding chart**).

Check there is no clutch drag by checking its disengagement point (see **Technical Note 3451A, Clutch: Fault finding**).

Not correct

Carry out the corrective actions.

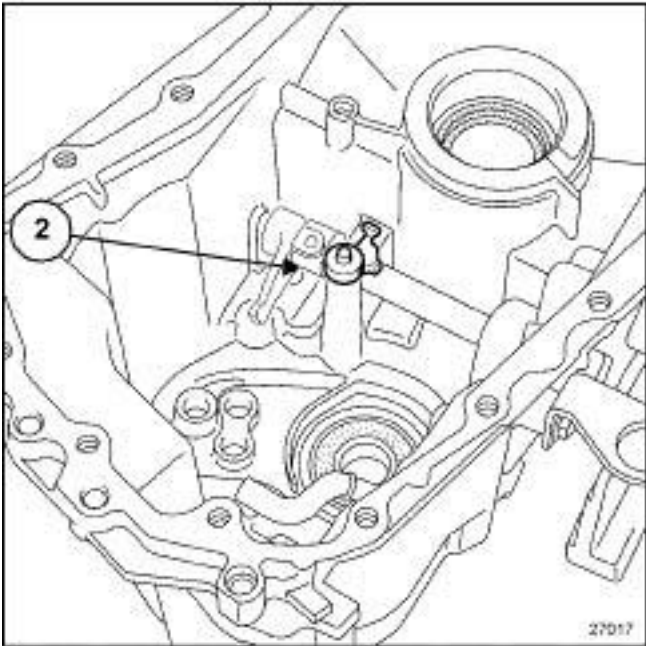
Gearbox environment
correct

Remove and open the gearbox.

In the case of a complaint about jamming when shifting from 5th to 4th on a cable operated J gearbox.

Not
correct

Replace the latch kit (2) for reverse gear (see **Technical Note 6029A, manual gearbox, manual gearbox control shaft: Removal - Refitting**).



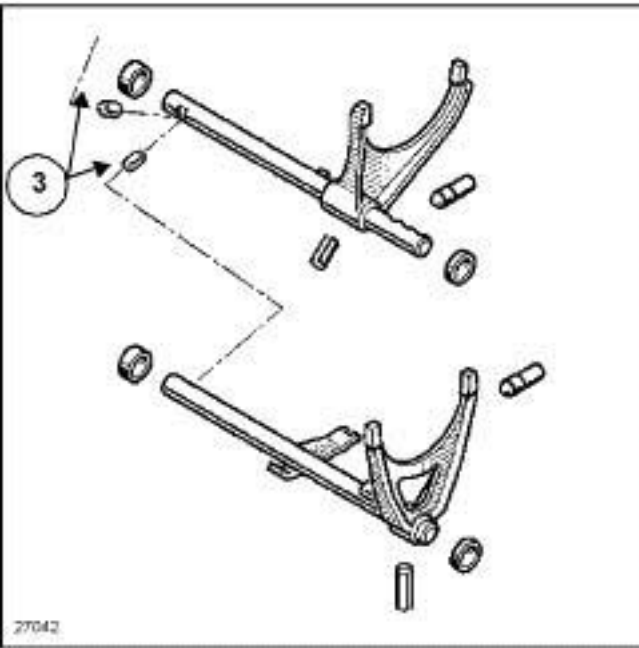
C

ALP 1 CONTINUED 3

C

Check:

- The locking shafts slide correctly (3)
- The locking shafts are correct (3)



Not
correct

- Replace the locking shafts (see **Technical Note Gearbox***, **manual gearbox, shafts and synchronisers: Refitting**).
- If the sliding fault is still present, contact Techline (clutch cover fault).

Locking shafts correct

In all other cases and for all other gearboxes

Replace the function of the gear or gears corresponding to the customer complaint (pinion, hub, selector rod, blocking ring and engaging ring).

* see introduction

INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

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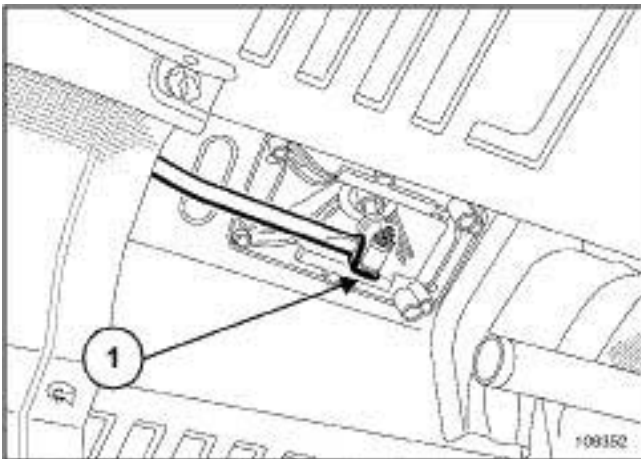
ALP 2	Jamming with rod operated gearboxes
NOTES	<ul style="list-style-type: none">– Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.– Check that the clutch pedal travel is not obstructed by the floor carpet.– If there is jamming in 2nd AND 3rd with the ND gearbox: see Technical Note 4559A, gears jamming when engaging 2nd or 3rd gear. <p>The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.</p>

ALP 2 CONTINUED 1

External control check

Visually inspect:

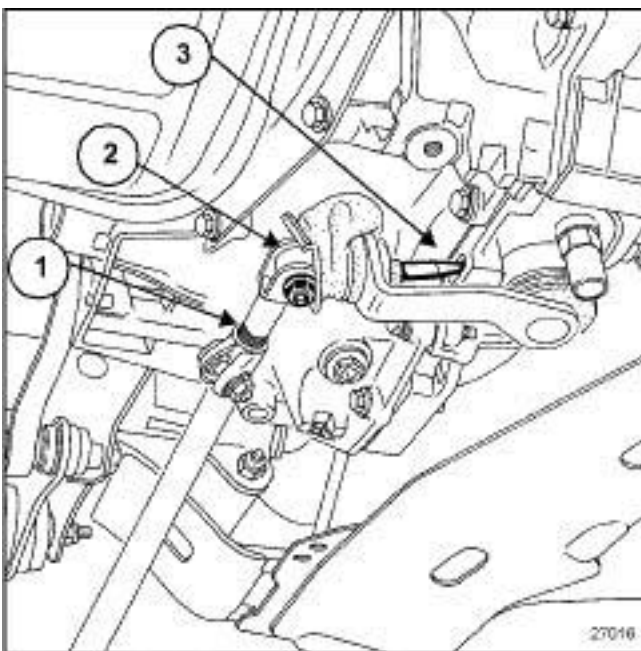
- The presence of grease (33 medium) on the control lever / selector linkage joint (1).



Not
correct →

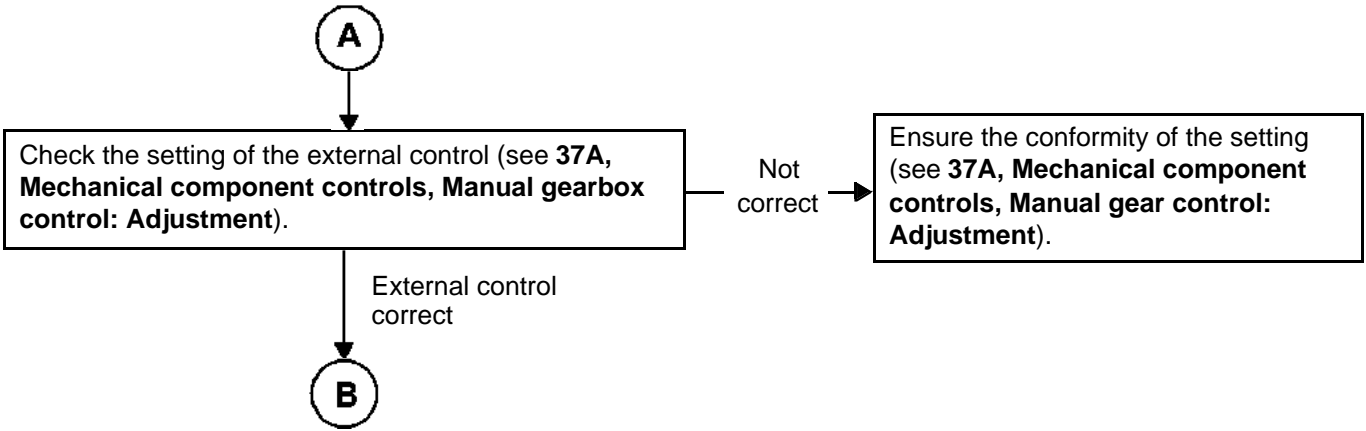
Grease the parts that have insufficient
grease

- The presence of grease (transmission grease) on the selector linkage / gearbox linkage joint (2) (detach the gaiter and remove the plastic clip if necessary).
- The presence of grease (33 medium) at the gearbox output lever / linkage joint (3).

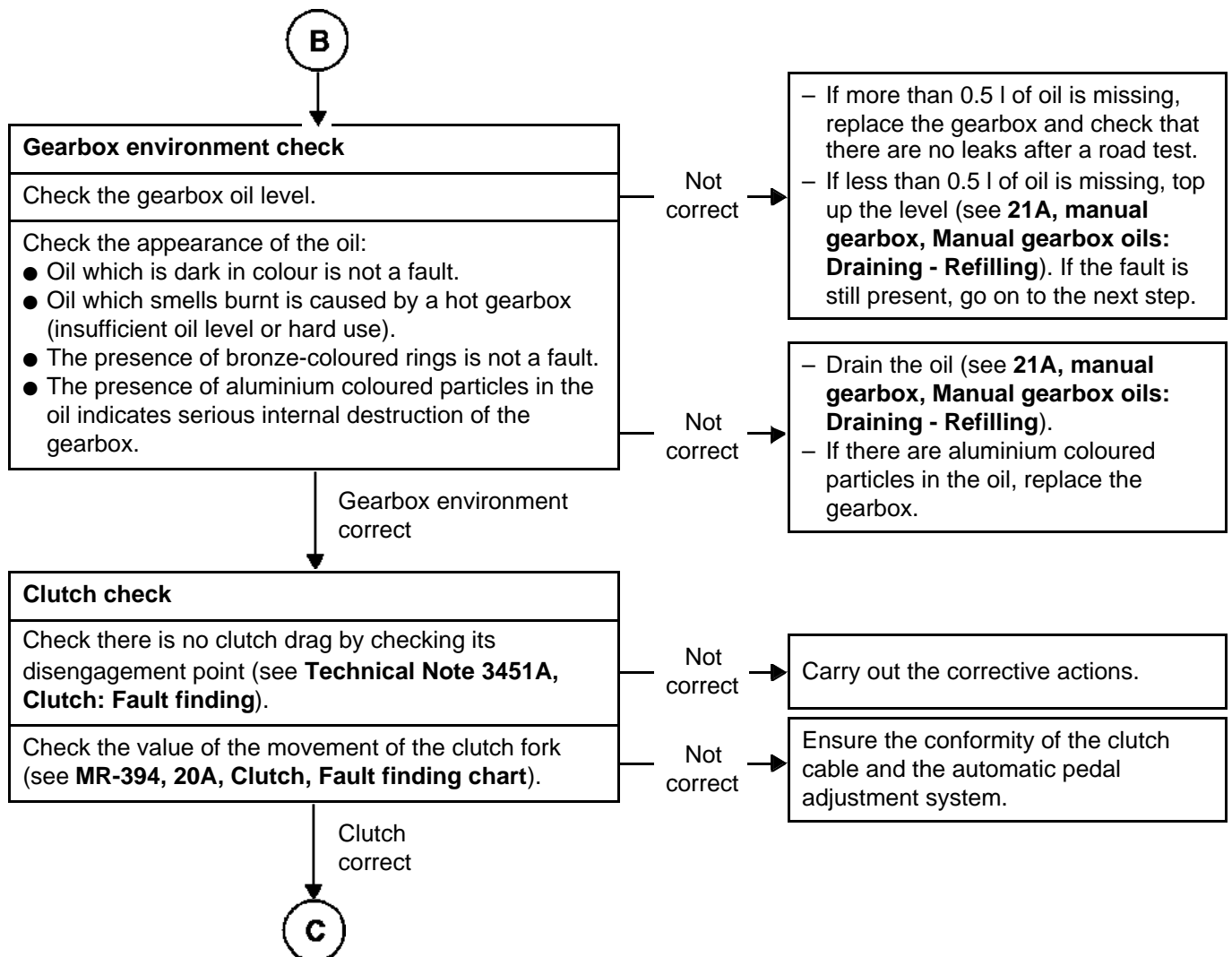


A

ALP 2
CONTINUED 2



ALP 2 CONTINUED 3

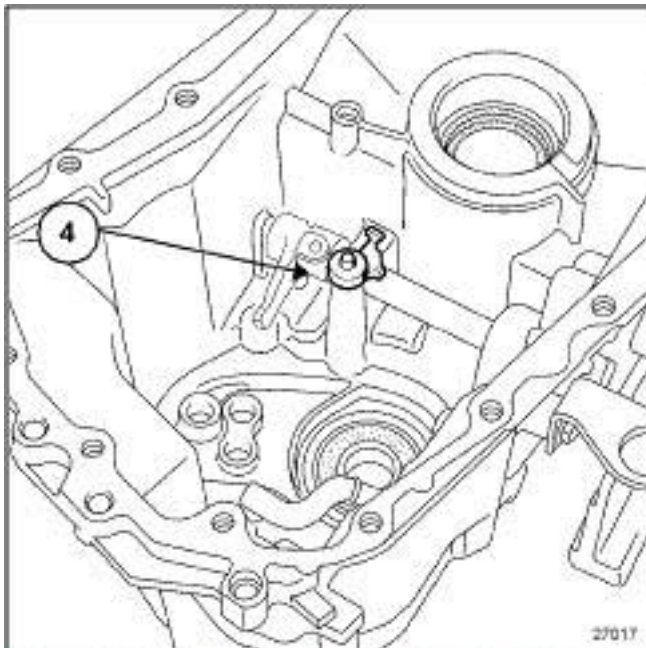


ALP 2
CONTINUED 4

C

Remove and open the gearbox.

In the case of a complaint about jamming when shifting from 5th to 4th on a JH gearbox.



Not
correct →

Replace the latch kit for reverse gear (4) (see **Technical Note 6029A, manual gearbox, manual gearbox control shaft: Removal - Refitting**).

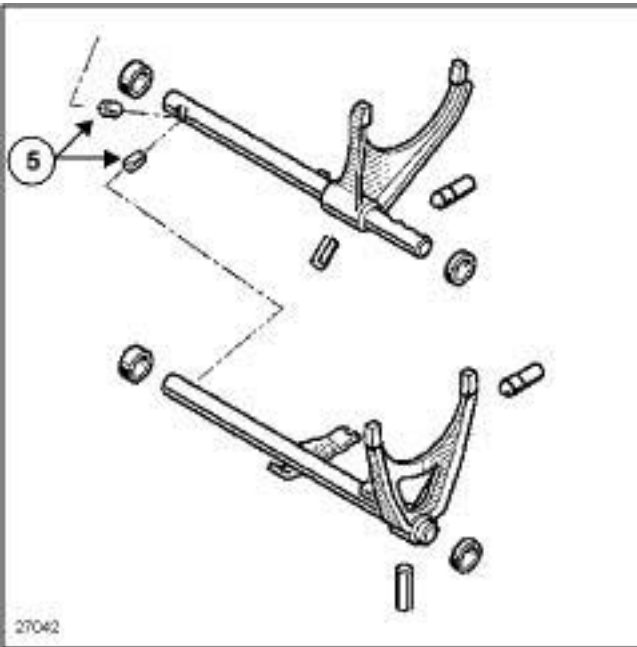
D

ALP 2 CONTINUED 5

D

Check:

- The locking shafts slide correctly (5)
- The locking shafts are correct (5)



Not
correct →

- Replace the locking shafts (see **Technical Note Gearbox***, **manual gearbox, shafts and synchronisers: Refitting**).
- If the sliding fault is still present, contact the Techline for information on the clutch cover.

Locking shafts correct

Replace the function of the gear or gears corresponding to the customer complaint (pinion, hub, selector rod, blocking ring and engaging ring).

* see introduction

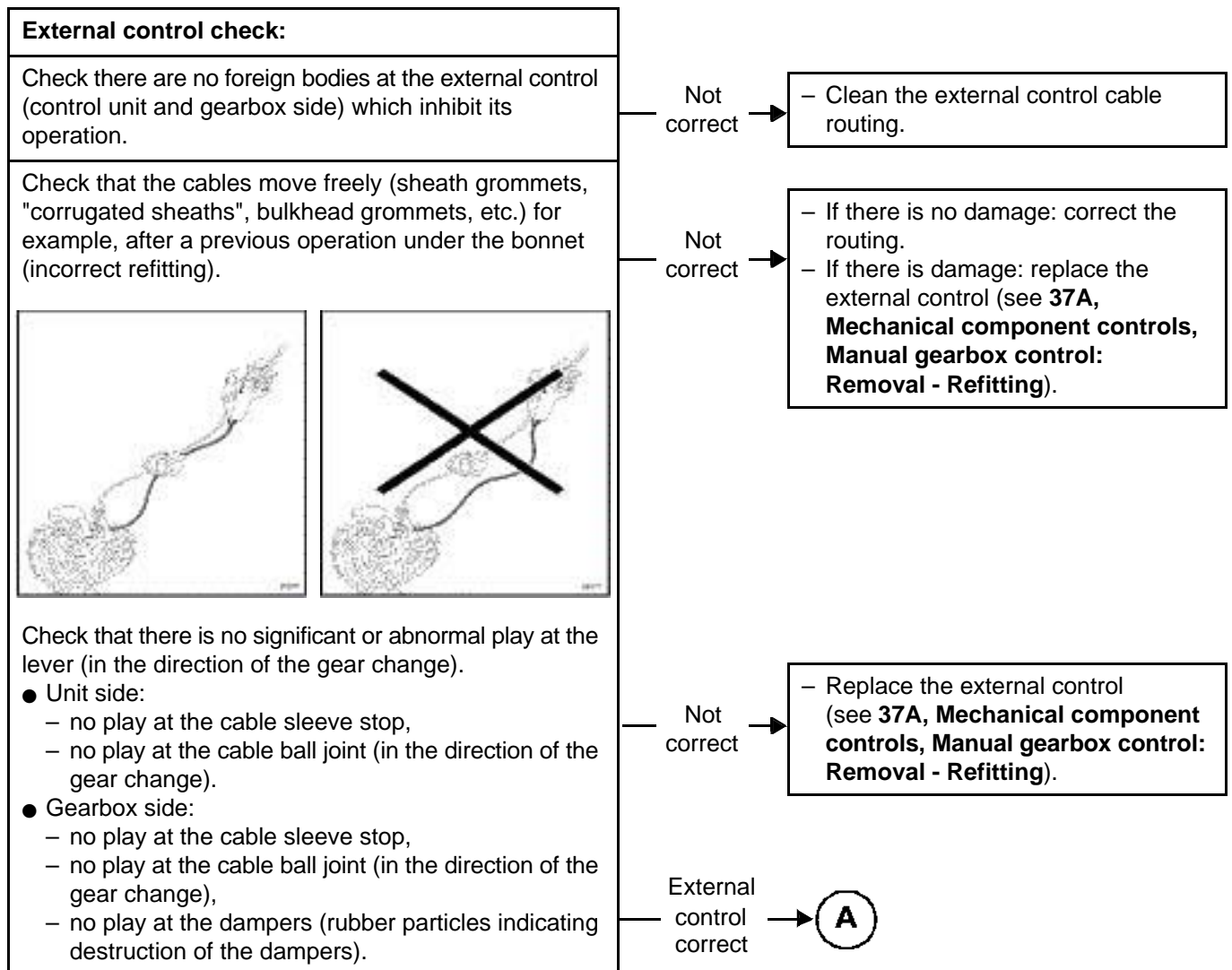
INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

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ALP 3	Cable operated gearboxes jumping out of gear
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NOTES	<ul style="list-style-type: none"> – Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints. – Check that the clutch pedal travel is not obstructed by the floor carpet. – The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.
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ALP 3 CONTINUED 1

A

Engine and transmission assembly suspended mountings check:

Check the suspended mountings on the engine and gearbox sides and the engine tie-bar (broken, damaged, incorrectly tightened, incorrectly positioned, etc.).

Not correct →

Replace the damaged suspended engine mounting or engine tie-bar (see **19D, Engine mounting**).

Check the suspended mounting rubber pads on the engine and gearbox sides and engine tie-bar (torn, damaged, incorrectly positioned, missing, etc.).

Not correct →

Replace the damaged rubber pad (see **19D, Engine mounting**).

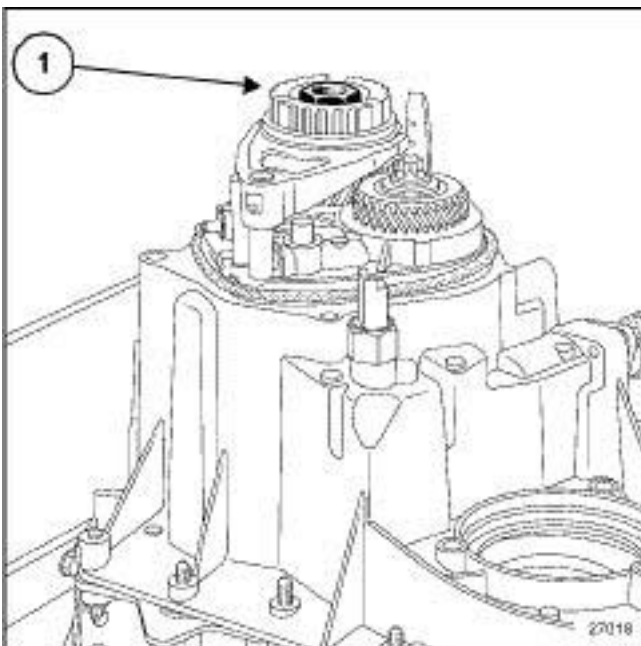
Engine and transmission assembly suspended mountings

Checking the 5th gear nut on the input shaft (1) (only on J gearbox)

If the vehicle is fitted with a J gearbox and is only jumping out of gear in 5th.

Not correct →

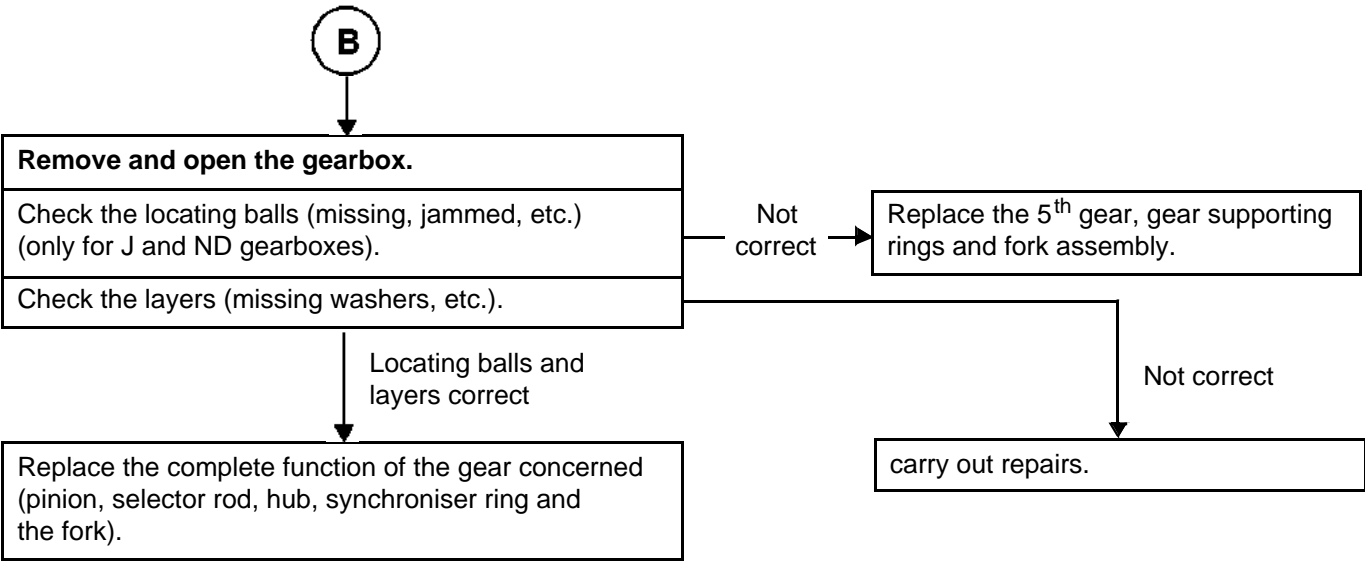
Replace the 5th gear, gear supporting rings and fork assembly.



5th gear nut correct →

B

ALP 3 CONTINUED 2	
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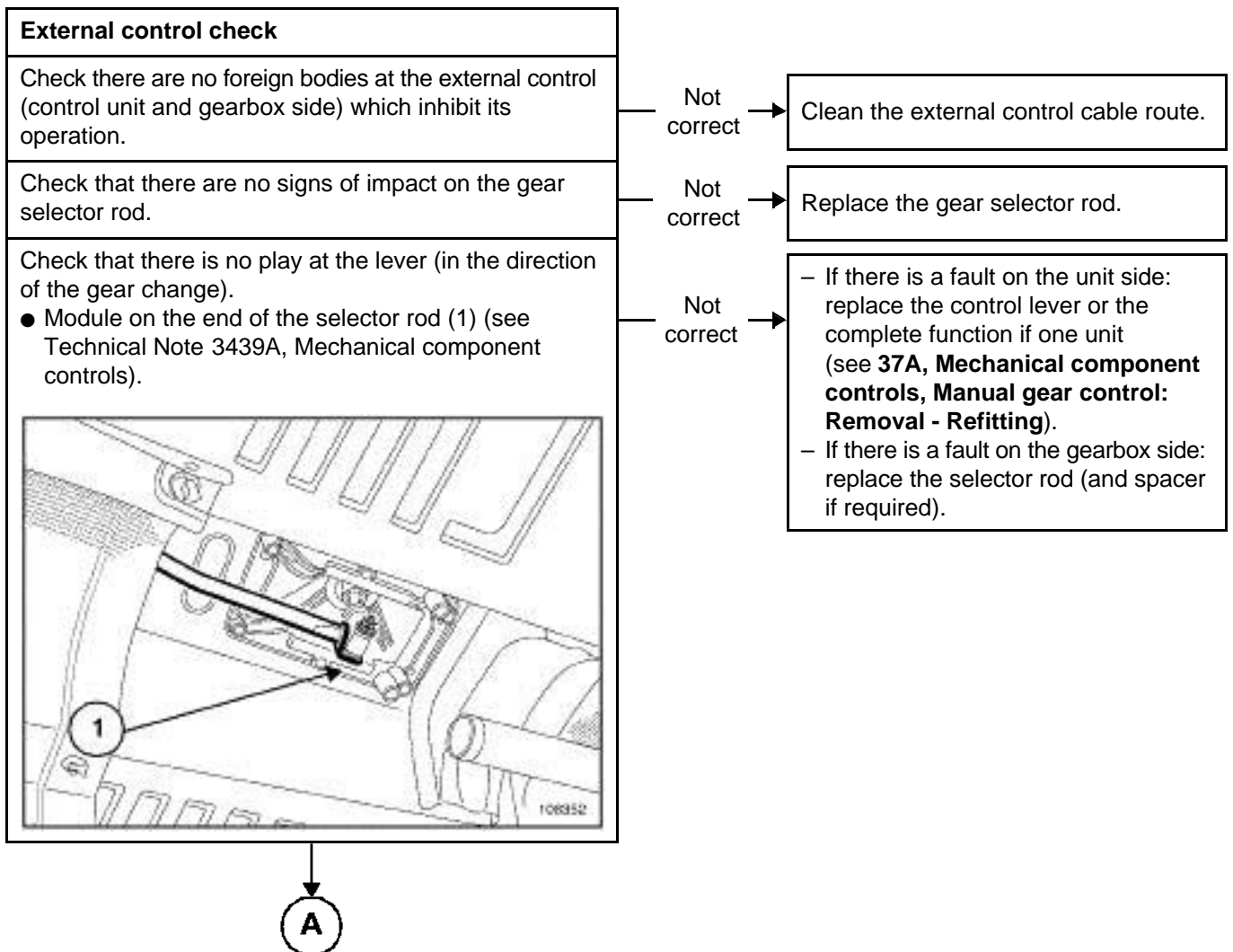
INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

01E

ALP 4	Rod operated gearboxes jumping out of gear
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NOTES	<ul style="list-style-type: none">– Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.– Check that the clutch pedal travel is not obstructed by the floor carpet.– The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.
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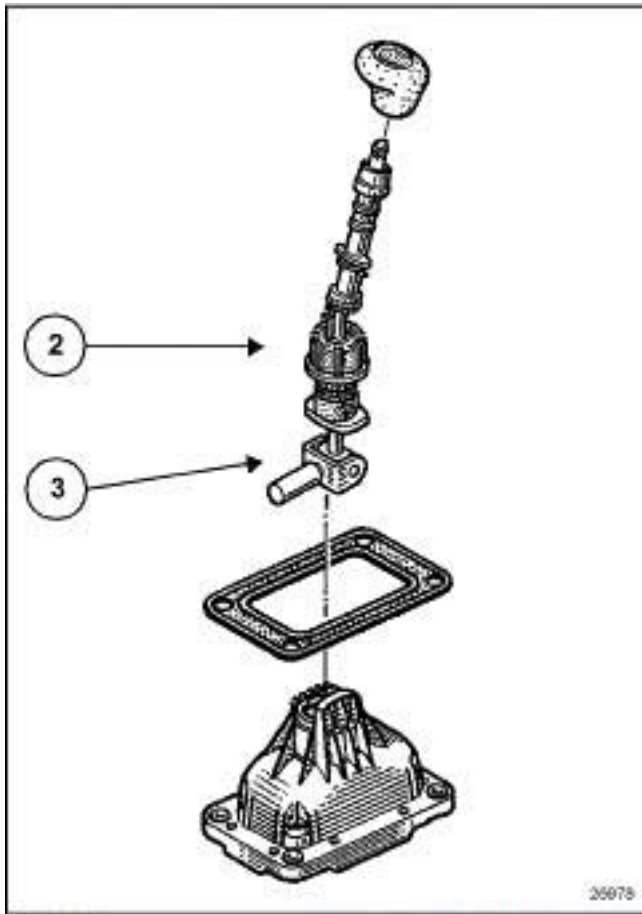
ALP 4 CONTINUED 1

A

- Control unit side:
 - no play at the lever ball joint (2),
 - no play at the joint at the foot of the lever or the selector rod mounting (3),
 - check that there is no tension at the gear lever gaiter (if necessary check without the gaiter).

Not
correct →

- If there is a fault on the unit side:
replace the control lever or the
complete function if it is not sold
separately (see **37A, Mechanical
component controls, Manual gear
control:**
Removal - Refitting).
- If there is a fault on the gearbox side:
replace the selector rod (and spacer
if required).

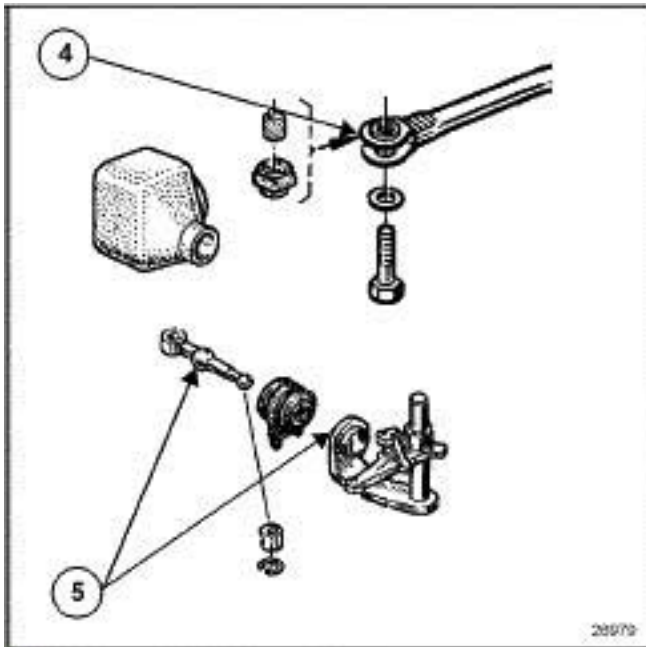


B

ALP 4 CONTINUED 2

B

- Gearbox side:
 - no play at the linkage - selector rod connection (4),
 - no play at the manual gearbox lever ball joints (5).



External control correct

Engine and transmission assembly suspended mountings check:

Check the suspended mountings on the engine and gearbox sides and the engine tie-bar (broken, damaged, incorrectly tightened, incorrectly positioned, etc.).

Not
correct

Replace the damaged suspended engine mounting or engine tie-bar (see **19D, Engine mounting**).

C

INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

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ALP 4
CONTINUED 3

C

Check the suspended mounting rubber pads on the engine and gearbox sides and engine tie-bar (torn, damaged, incorrectly positioned, missing, etc.).

Not
correct →

Replace the damaged rubber pad
(see **19D, Engine mounting**).

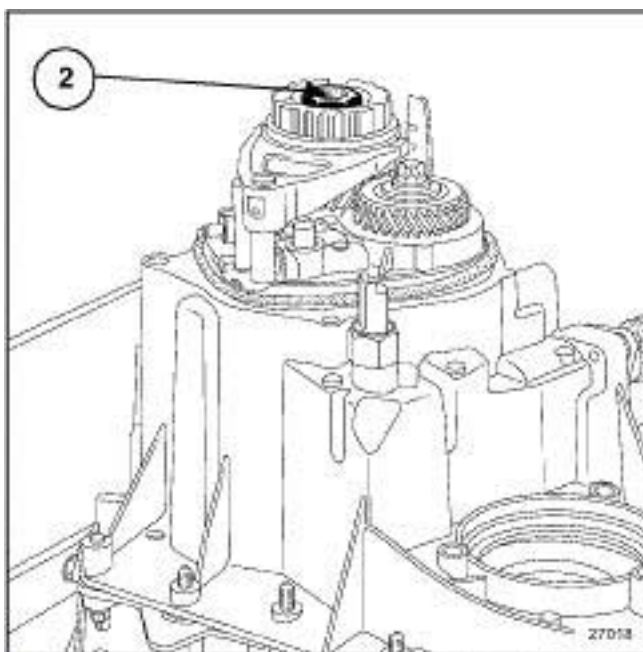
Engine and
transmission assembly
suspended mountings

**Checking the 5th gear nut on the input shaft
(only on J gearbox)**

Not
correct →

Replace the 5th gear, gear supporting
rings and fork assembly.

If the vehicle is fitted with a J gearbox and is only
jumping out of gear in 5th.



5th gear nut
correct

D

ALP 4
CONTINUED 4

D

Remove and open the gearbox.

Check the locating balls (missing, jammed, etc.)
(only for J gearbox).

Check the layers (missing washers, etc.).

Not
correct

Replace the 5th gear, gear supporting
rings and fork assembly.

Locating balls and
layers correct

Not correct

Replace the complete function of the gear concerned
(pinion, selector rod, hub, synchroniser ring and
the fork).

carry out repairs.

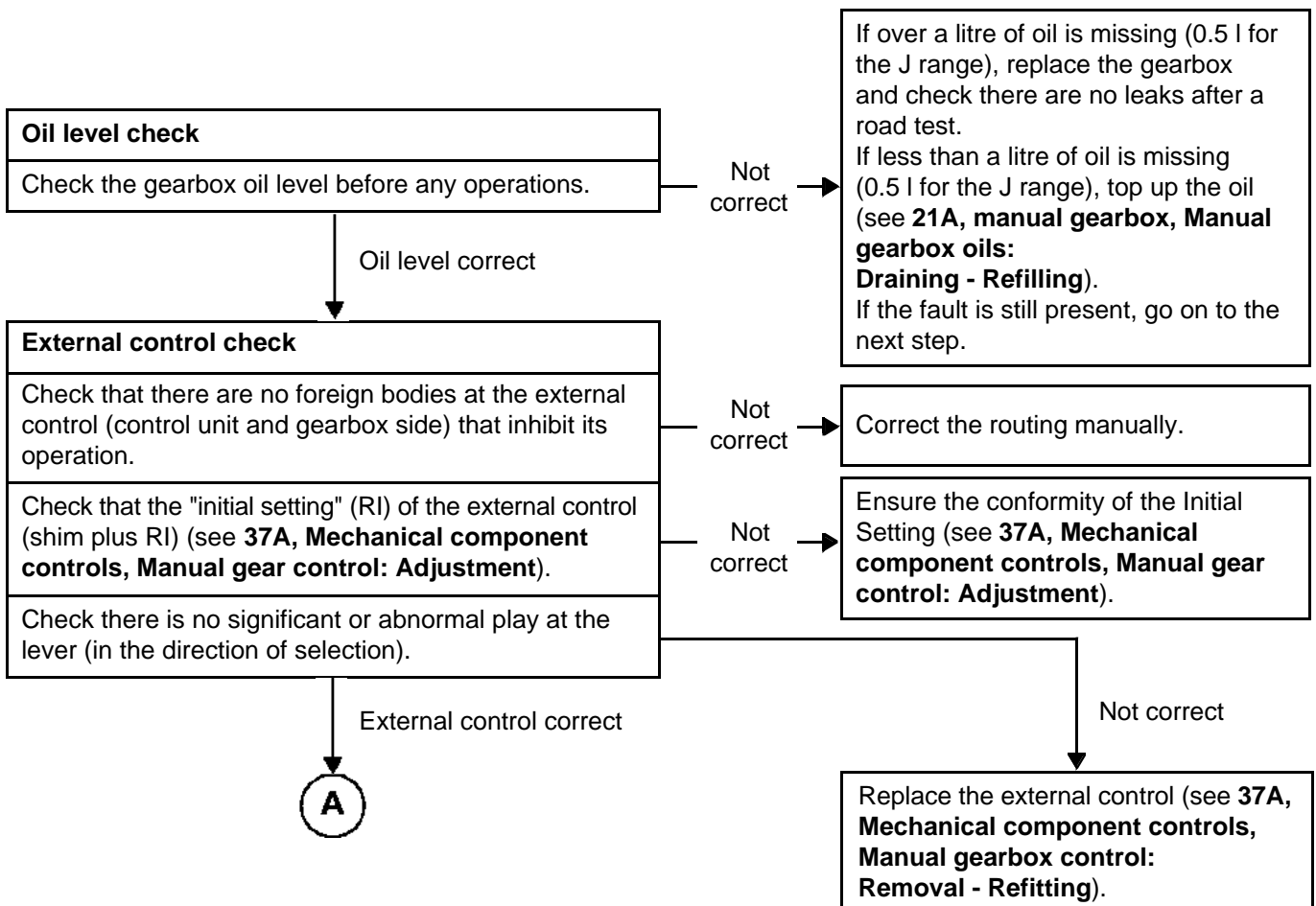
INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

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ALP 5	Difficult or impossible to engage gears for cable operated gearboxes
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NOTES	<ul style="list-style-type: none">– Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.– Check that the clutch pedal travel is not obstructed by the floor carpet.– The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.
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INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

01E

ALP 5
CONTINUED 1

A

Gearbox oil check

Check the appearance of the oil:

- Oil which is dark in colour is not a fault.
- Oil which smells burnt is caused by a hot gearbox (insufficient oil level or hard use).
- The presence of bronze-coloured rings is not a fault.
- The presence of aluminium coloured particles in the oil indicates serious internal destruction of the gearbox.

Not
correct

Drain the oil (see **21A, manual gearbox, manual gearbox oils: Draining - Refilling**).
If there are aluminium coloured particles in the oil, replace the gearbox.

Gearbox oil
correct

Clutch check

Check that there is no clutch drag by checking its disengagement point (see **Technical Note 3451A, Clutch: Fault finding**).

For hydraulic clutches, check that the clutch is operating correctly (see **MR-394, 20A, Clutch, Fault finding chart**).

For cable operated clutches, check:

- The movement value of the clutch fork (see **20A, Clutch**).
- For Logan: check the adjustment of the cable (see **20A, Clutch, Clutch thrust bearing: Removal - Refitting**).

Not
correct

Carry out the necessary corrective action.

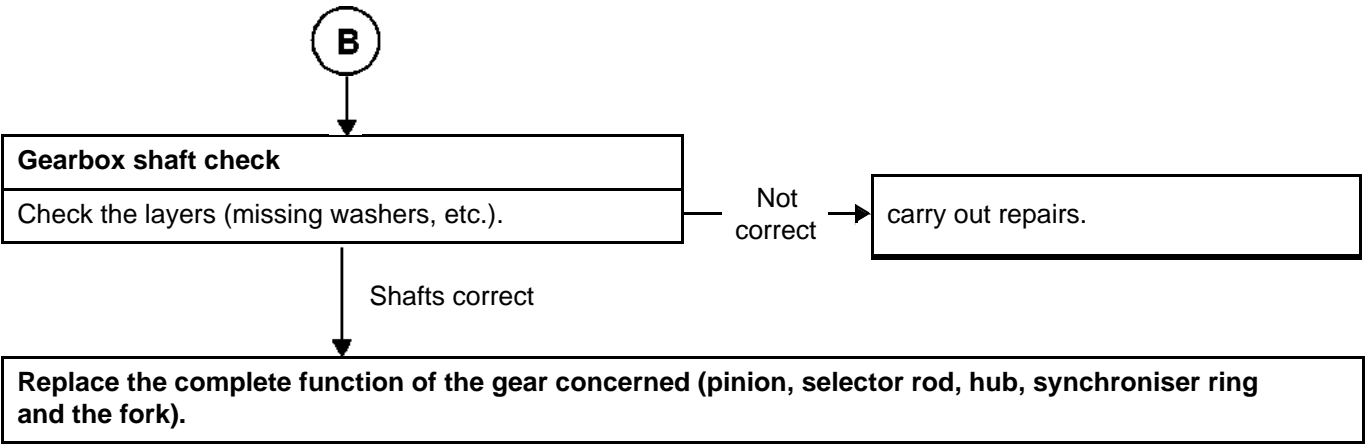
Not
correct

- Check the condition of the clutch cable and the automatic pedal adjustment system.
- For Logan: ensure the conformity of the adjustment of the cable (see **20A, Clutch, Clutch thrust bearing: Removal - Refitting**).

Clutch correct

B

ALP 5 CONTINUED 2	
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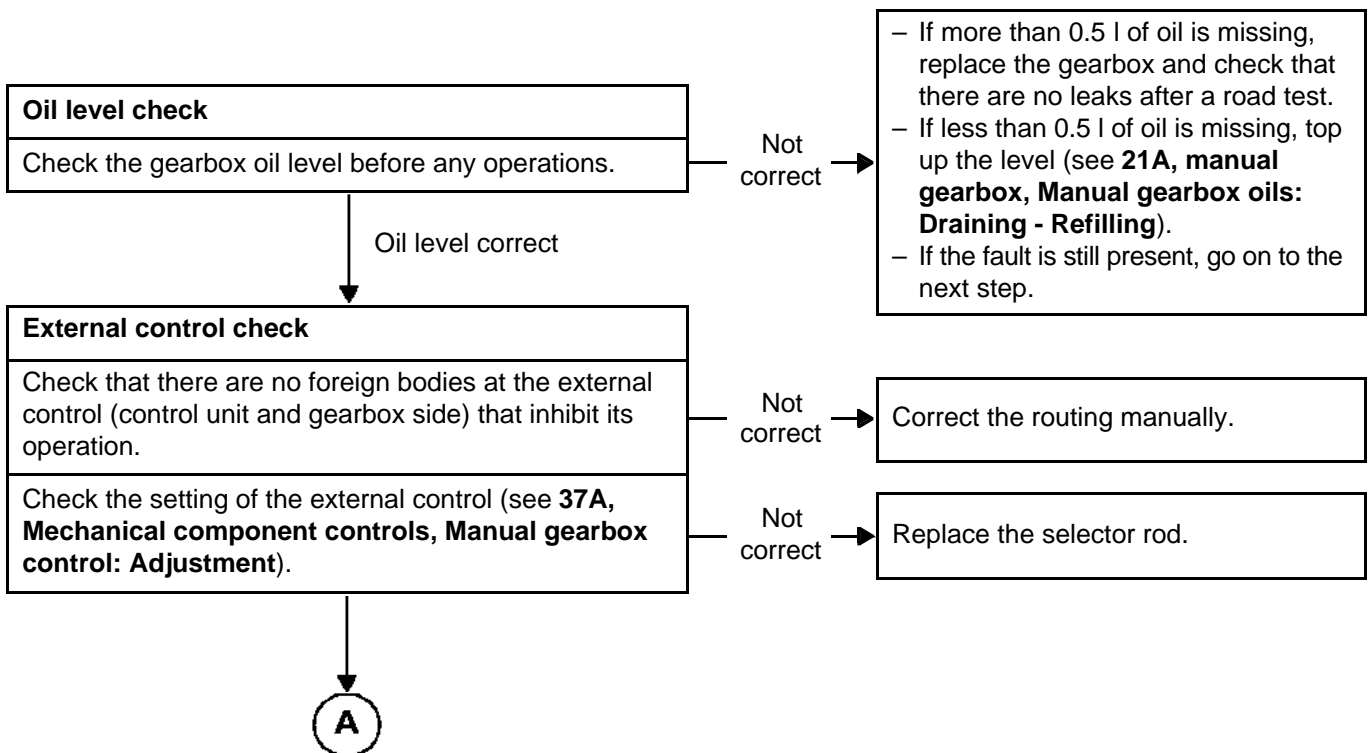


INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

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ALP 6	Difficult or impossible to engage gears for rod operated gearboxes
NOTES	<ul style="list-style-type: none">– Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.– Check that the clutch pedal travel is not obstructed by the floor carpet.– The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.

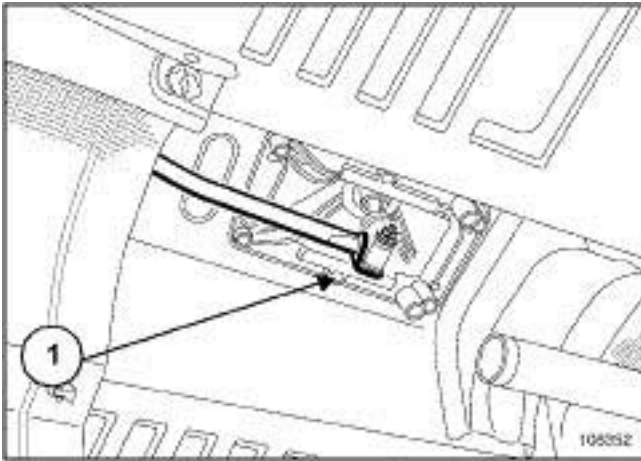


ALP 6 CONTINUED 1

A

Check that there is no play at the lever (in the direction of the gear change).

- Module on the end of the selector rod (1)
(See **Technical Note 3439A, Mechanical component controls**).



Not
correct →

- If there is a fault on the unit side:
replace the control lever or the
complete function if it is not sold
separately (see **37A, Mechanical
component controls, Manual gear
control: Removal - refitting**).
- If there is a fault on the gearbox side:
replace the selector rod (and spacer
if required).

B

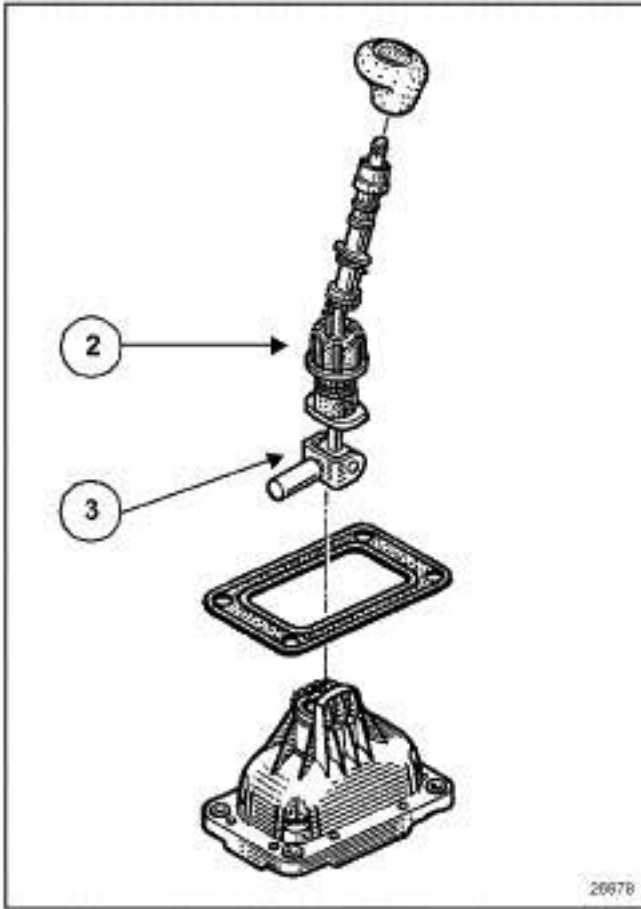
ALP 6 CONTINUED 2

B

- Control unit side:
 - no play at the lever ball joint (2),
 - no play at the joint at the foot of the lever or the selector rod mounting (3),
 - check that there is no tension at the gear lever gaiter (if necessary check without the gaiter).

Not
correct →

- If there is a fault on the unit side:
replace the control lever or the
complete function if it is not sold
separately (see **37A, Mechanical
component controls, Manual gear
control: Removal - refitting**).
- If there is a fault on the gearbox side:
replace the selector rod (and spacer
if required).

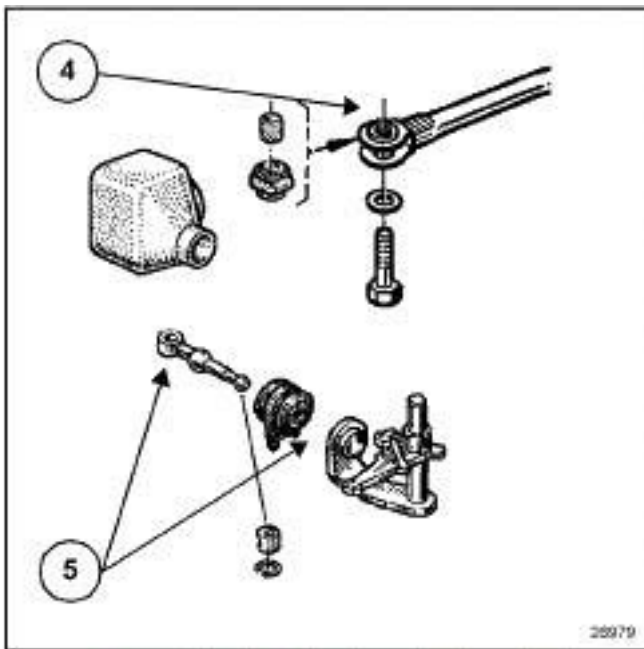


C

ALP 6 CONTINUED 3

C

- Gearbox side:
 - no play at the linkage - selector rod connection (4)
 - no play at the manual gearbox lever ball joints (5)



Gearbox oil check

Check the appearance of the oil:

- Oil which is dark in colour is not a fault.
- Oil which smells burnt is caused by a hot gearbox (insufficient oil level or hard use).
- The presence of bronze-coloured rings is not a fault.
- The presence of aluminium coloured particles in the oil indicates serious internal destruction of the gearbox.

Not
correct

- Drain the oil (see 21A, **manual gearbox, Manual gearbox oils: Draining - Refilling**).
- If there are aluminium coloured particles in the oil, replace the gearbox.

Gearbox oil
correct

D

INTRODUCTION TO FAULT FINDING

Fault finding - Fault Finding Chart

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ALP 6
CONTINUED 4

D

Clutch check

Check that there is no clutch drag by checking its disengagement point (see **Technical Note 3451A, Clutch: Fault finding**).

Check:

- The movement value of the clutch fork (see **20A, Clutch**).
- For Logan: check the adjustment of the cable (see **20A, Clutch, Clutch thrust bearing: Removal - Refitting**).

Not
correct →

Carry out the necessary corrective action.

Not
correct →

- Check the condition of the clutch cable and the automatic pedal adjustment system.
- For Logan: ensure the conformity of the adjustment of the cable (see **20A, Clutch, Clutch thrust bearing: Removal - Refitting**).

Clutch
correct

Shaft check

Check the layers (missing washers, etc.).

Not
correct →

Carry out repairs.

Shafts
correct

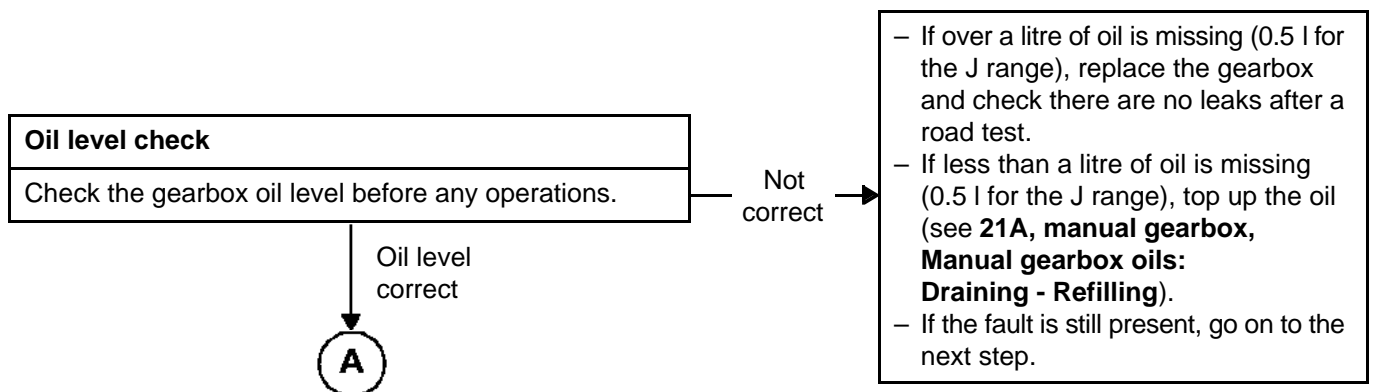
Replace the complete function of the gear concerned (pinion, selector rod, hub, synchroniser ring and the fork).

INTRODUCTION TO FAULT FINDING

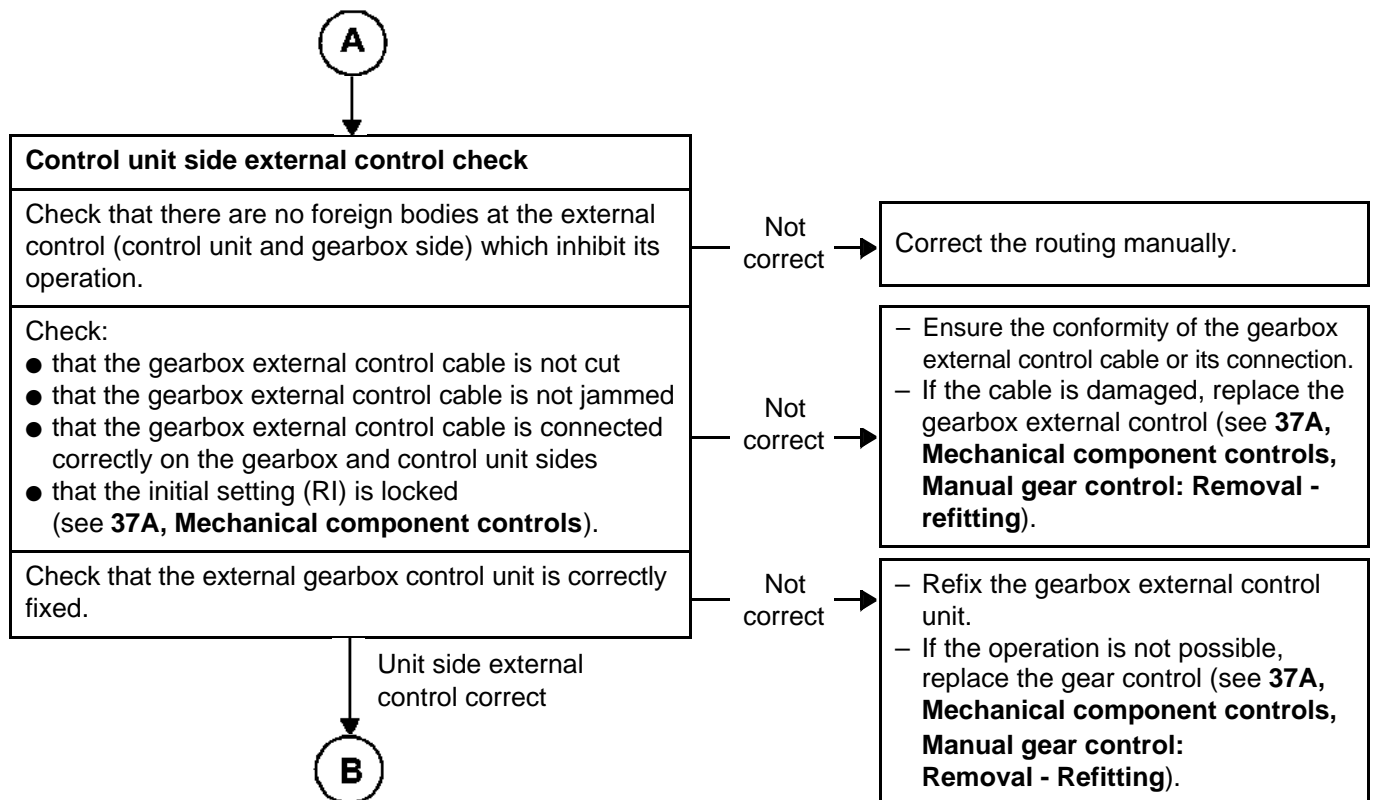
Fault finding - Fault Finding Chart

01E

ALP 7	Gearbox locked or ineffective for cable operated gearboxes
NOTES	<ul style="list-style-type: none">– Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.– Check that the clutch pedal travel is not obstructed by the floor carpet.– The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.



ALP 7 CONTINUED 1



ALP 7 CONTINUED 2

B

Driveshaft inspection

- Engage a gear.
- Position the vehicle on the lift.
- Block the rotation of the front right-hand wheel with a screwdriver.
- Attempt to rotate the front left-hand wheel.
- Repeat the test blocking the front left-hand wheel.

Not
correct →

- If the non-blocked wheel rotates on its own without driving the complete driveshaft, replace the defective driveshaft.
- If the non-blocked wheel rotates the complete driveshaft when rotated, replace the manual gearbox (see **21A, manual gearbox, manual gearbox: Removal - Refitting**).

Driveshafts
correct

Clutch check

Check that the clutch is not centrifuged by looking through the starter window to see if any traces of the lining are stuck to it.

Not
correct →

Replace the clutch kit
(see **20A, Clutch,
Pressure plate/drive plate:
Removal - Refitting**).

Clutch
correct

C

ALP 7
CONTINUED 3

C

Gearbox check:

For J gearboxes, put the gear lever in the neutral position:

- Remove the 5th gear cover.
- Check the alignment of the fork shafts.
- Check that there are no jammed gears.

Remove the manual gearbox.

Check:

- That two gears are not engaged simultaneously.
- That the selector finger is not jammed across the dogs.

Not
correct

Unblock the jammed gears (possible
information library (ACTIS solution).

Not
correct

Unblock the gearbox and change the
internal control (forks, internal selector
shaft, locating balls).

In all
other cases

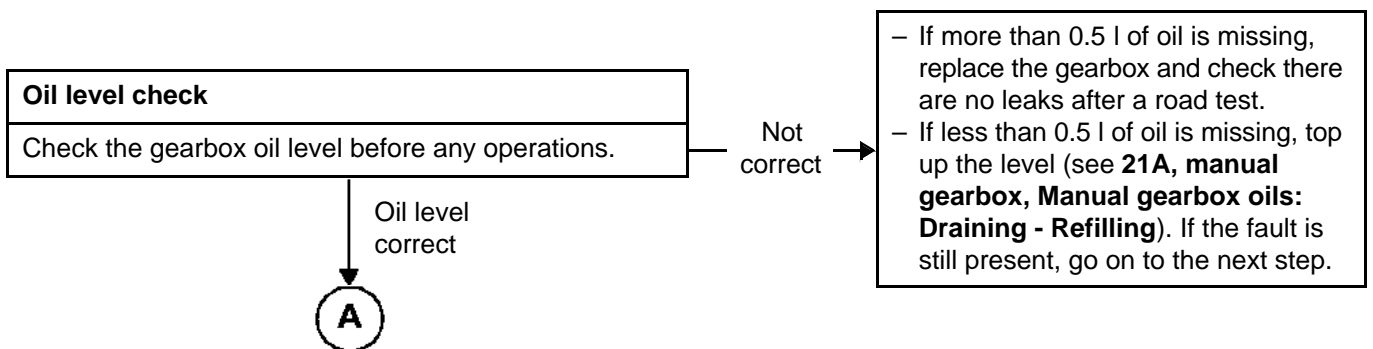
Replace the gearbox (see **21A, manual gearbox, manual gearbox:
Removal - Refitting**).

INTRODUCTION TO FAULT FINDING

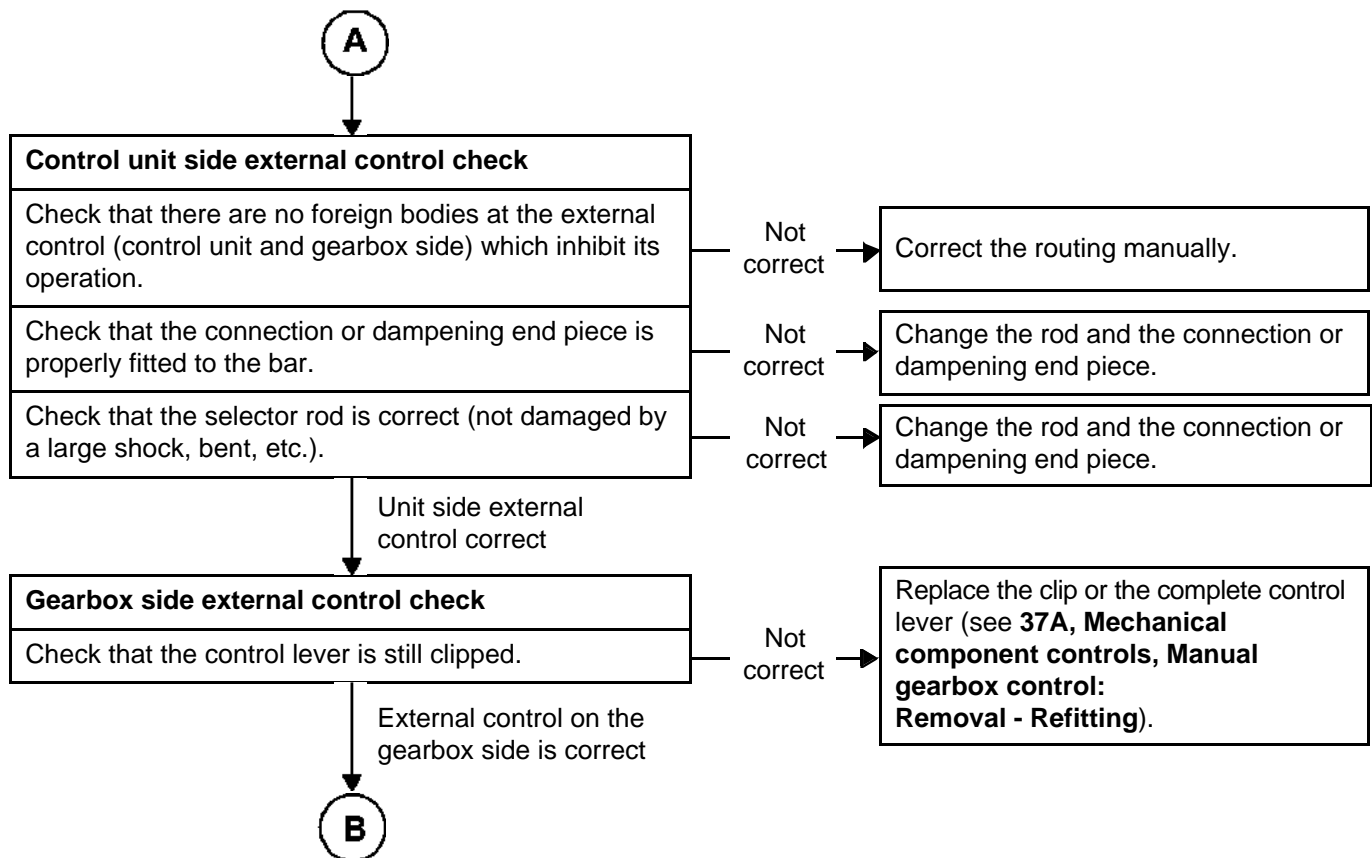
Fault finding - Fault Finding Chart

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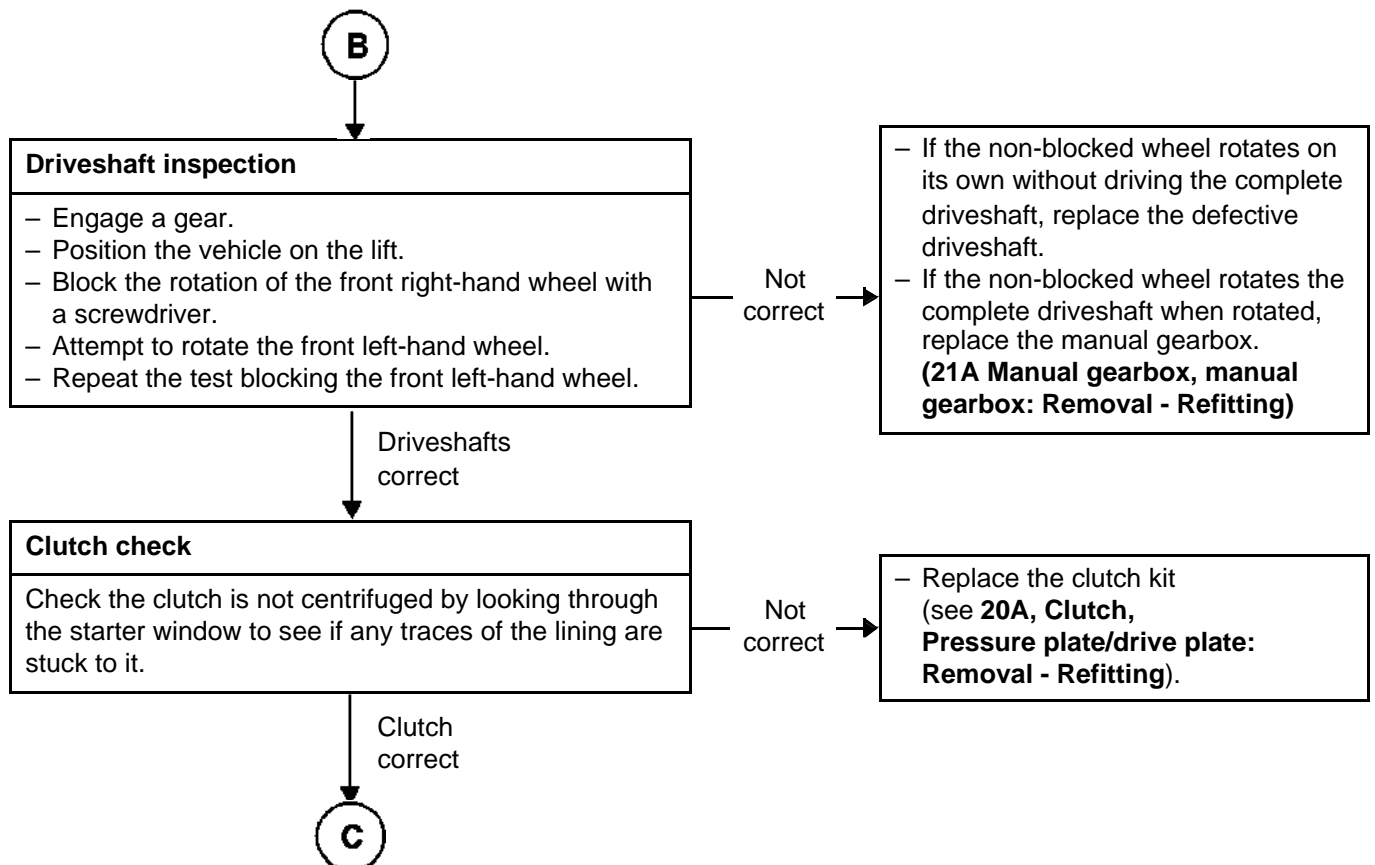
ALP 8	Gearbox locked or ineffective for rod operated gearboxes
NOTES	<ul style="list-style-type: none">– Before any operations, it is ESSENTIAL to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.– Check that the clutch pedal travel is not obstructed by the floor carpet.– The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.



ALP 8
CONTINUED 1



ALP 8 CONTINUED 2



ALP 8
CONTINUED 3



Gearbox check

Put gear lever in the neutral position:

- Remove the 5th gear cover.
- Check the alignment of the fork shafts.
- Check that there are no jammed gears.

Not
correct

Unblock the jammed gears (possible
information library (ACTIS solution)).

Remove the manual gearbox.

Check:

- That two gears are not engaged simultaneously.
- That the selector finger is not jammed across the dogs.

Not
correct

Unblock the gearbox and change the
internal control (forks, internal selector
shaft, locating balls).

In all
other cases

Replace the gearbox (see **21A, manual gearbox, manual gearbox:
Removal - Refitting**).