

# RENAULT

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## Technical Note 6511A

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

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Sub-section concerned: 01E

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## 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

01E

### 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:

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

### 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

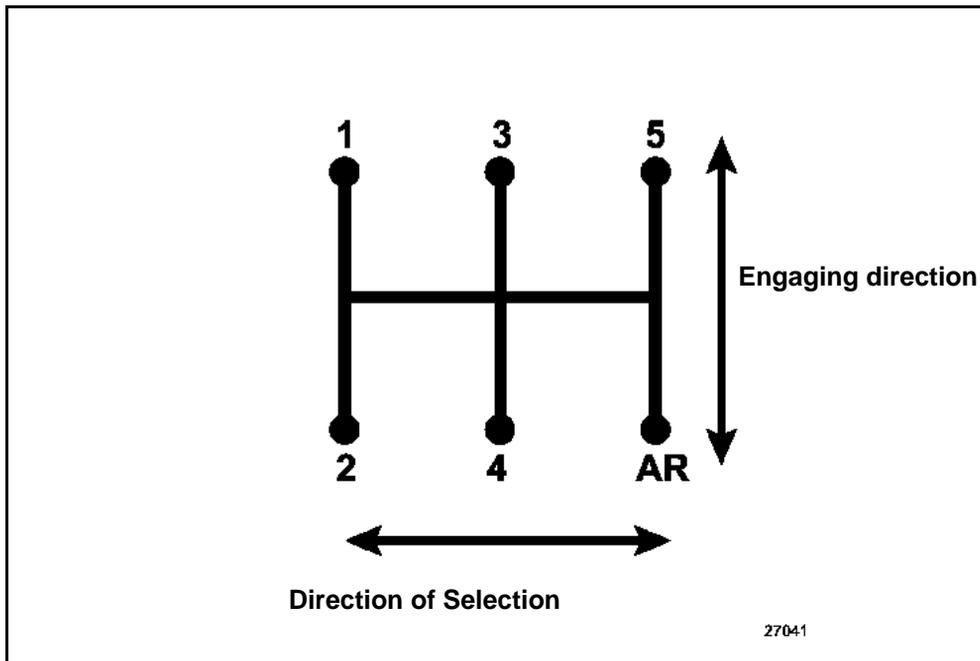
### 4. SAFETY INSTRUCTIONS

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.

### **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.

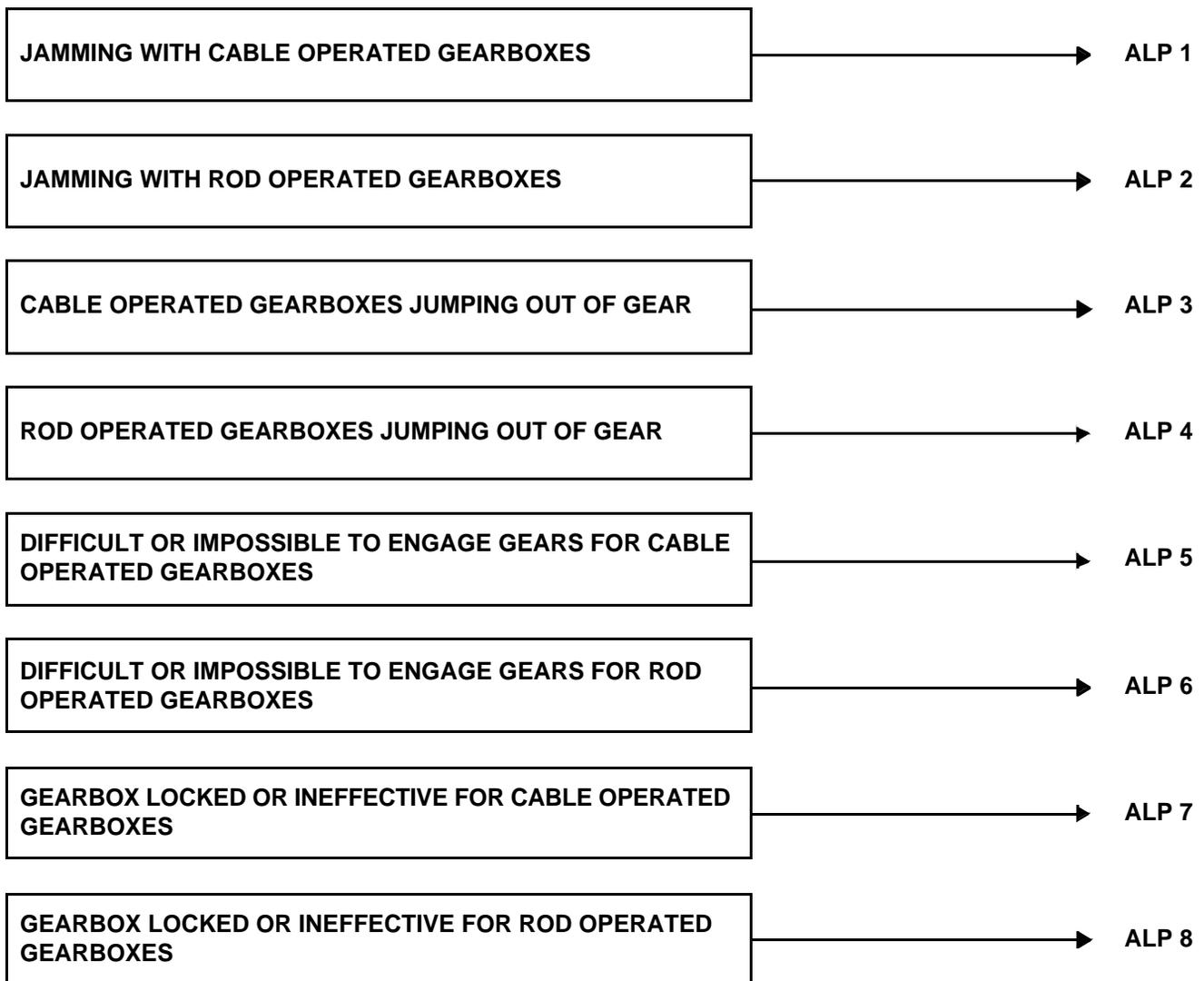
Appearance context:

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

# INTRODUCTION TO FAULT FINDING

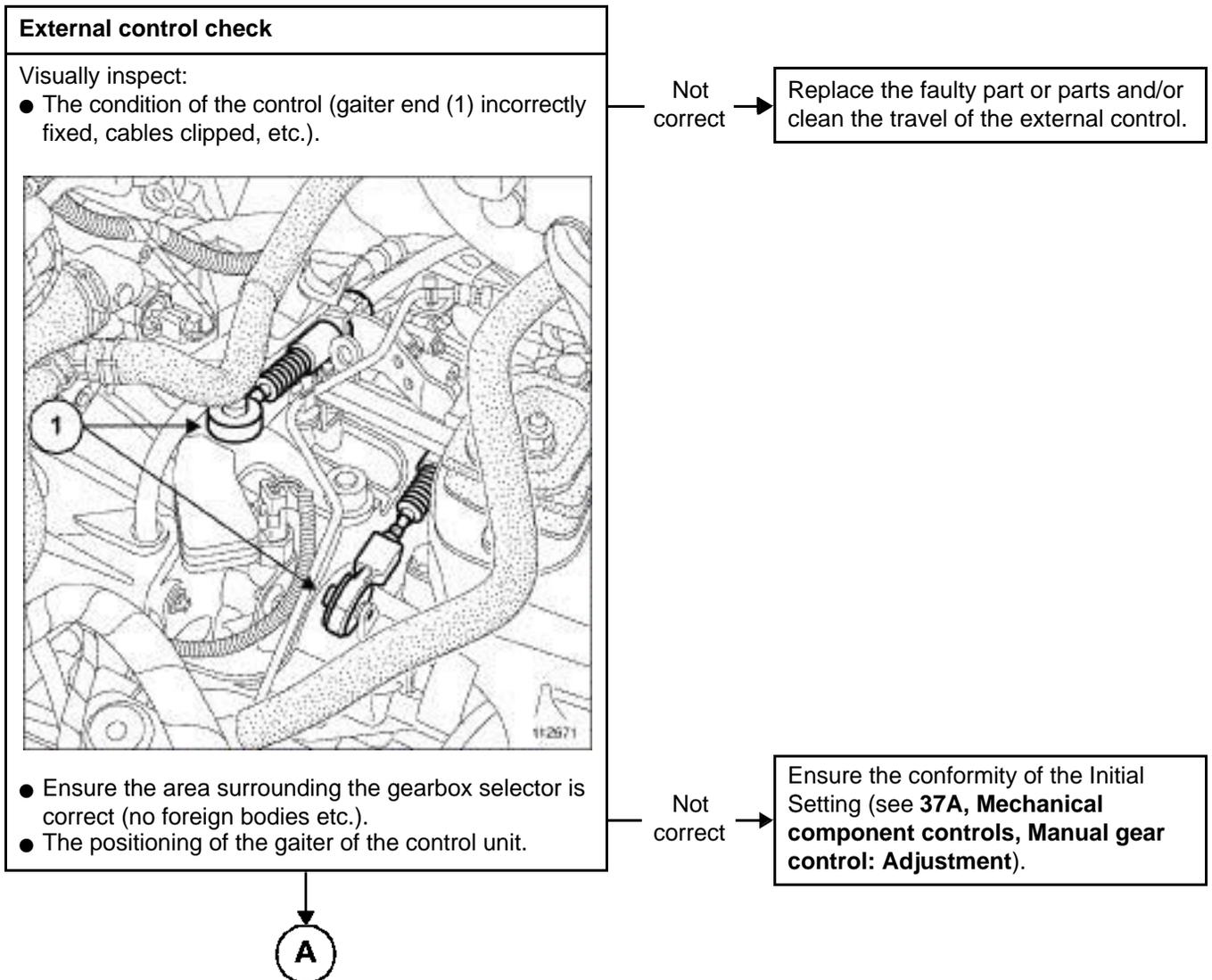
## Fault finding - Customer complaints

**01E**

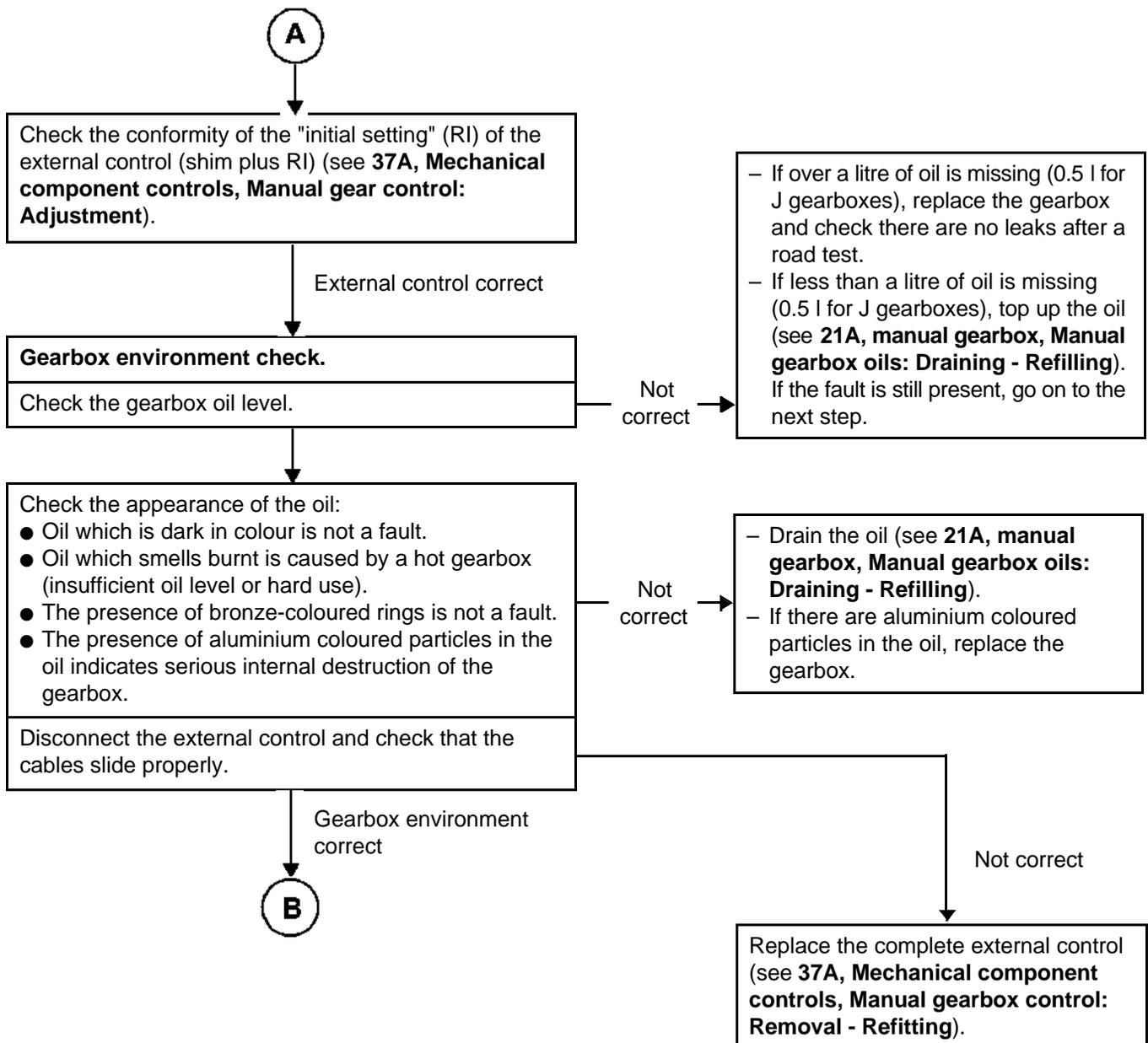


<b>ALP 1</b>	<b>Jamming with cable operated gearboxes</b>
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<b>NOTES</b>	<ul style="list-style-type: none"> <li>- Before any operations, it is <b>ESSENTIAL</b> to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.</li> <li>- Check that the clutch pedal travel is not obstructed by the floor carpet.</li> <li>- If there is jamming in 2<sup>nd</sup> AND 3<sup>rd</sup> with the ND gearbox: see Technical Note 4559A, gears jamming when engaging 2<sup>nd</sup> or 3<sup>rd</sup> gear.</li> <li>- 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.</li> </ul>
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<p><b>ALP 1 CONTINUED 1</b></p>	
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ALP 1 CONTINUED 2	
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B

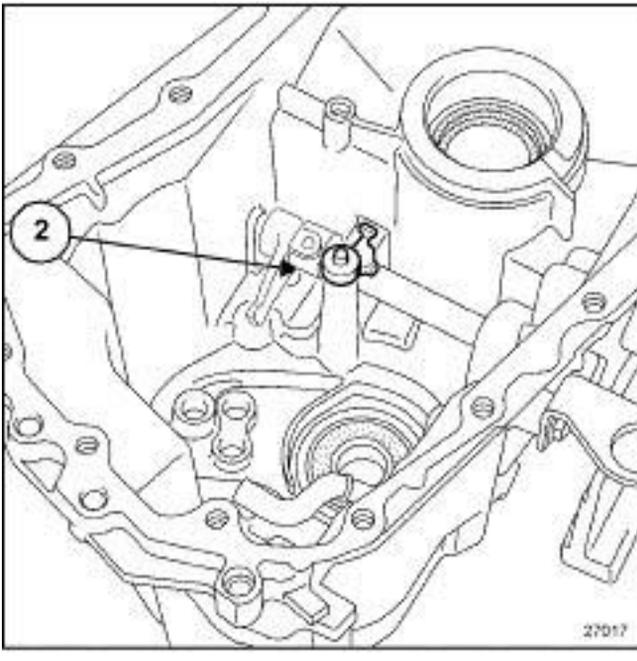
<b>Clutch check</b>	
Check that the clutch operates correctly (see <b>MR-394, 20A, Clutch, Fault finding chart</b> ).	
Check there is no clutch drag by checking its disengagement point (see <b>Technical Note 3451A, Clutch: Fault finding</b> ).	

Not correct → Carry out the corrective actions.

Gearbox environment correct

<b>Remove and open the gearbox.</b>	
In the case of a complaint about jamming when shifting from 5 <sup>th</sup> to 4 <sup>th</sup> 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**).



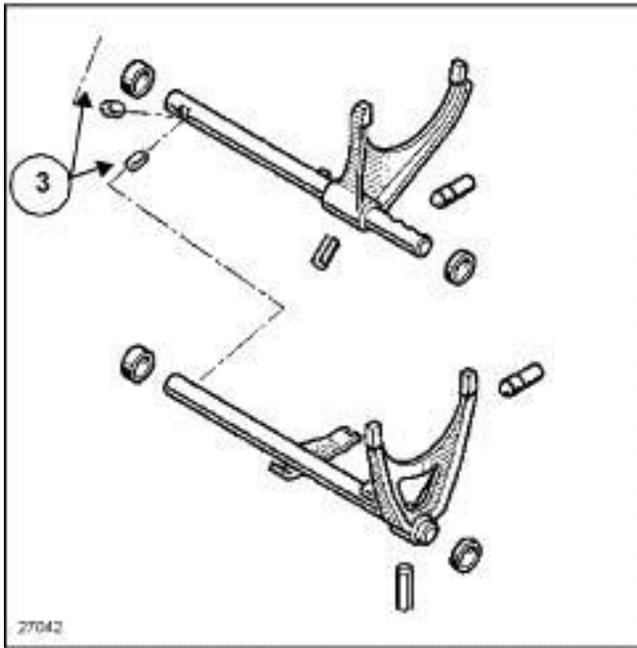
C

ALP 1 CONTINUED 3	
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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

**01E**

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

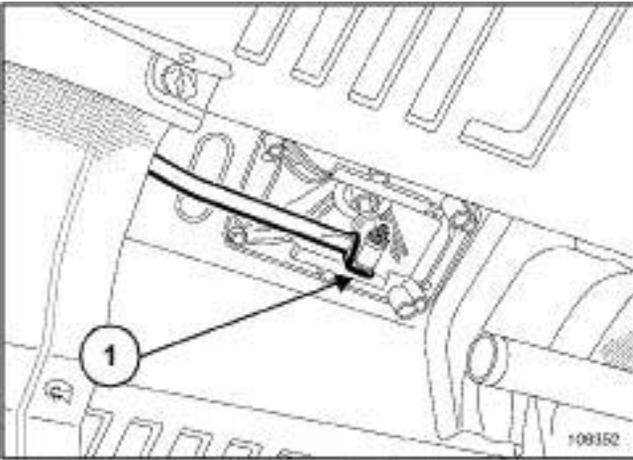
External control check

Visually inspect:

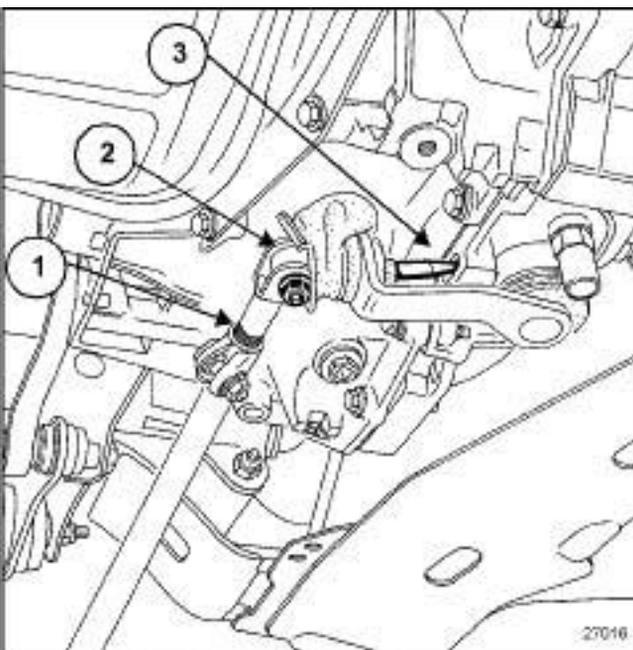
- The presence of grease (33 medium) on the control lever / selector linkage joint (1).

Not correct →

Grease the parts that have insufficient grease

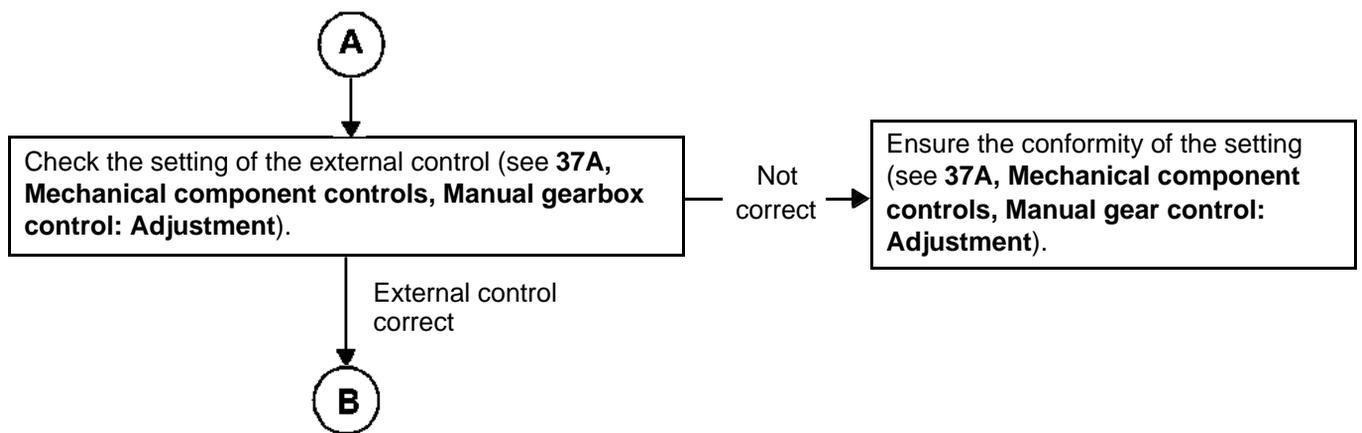


- The presence of grease (transmission grease) on the selector linkage / gearbox linkage joint (2) (detach the gaiter and remove the plastic clip if necessary).
- The presence of grease (33 medium) at the gearbox output lever / linkage joint (3).

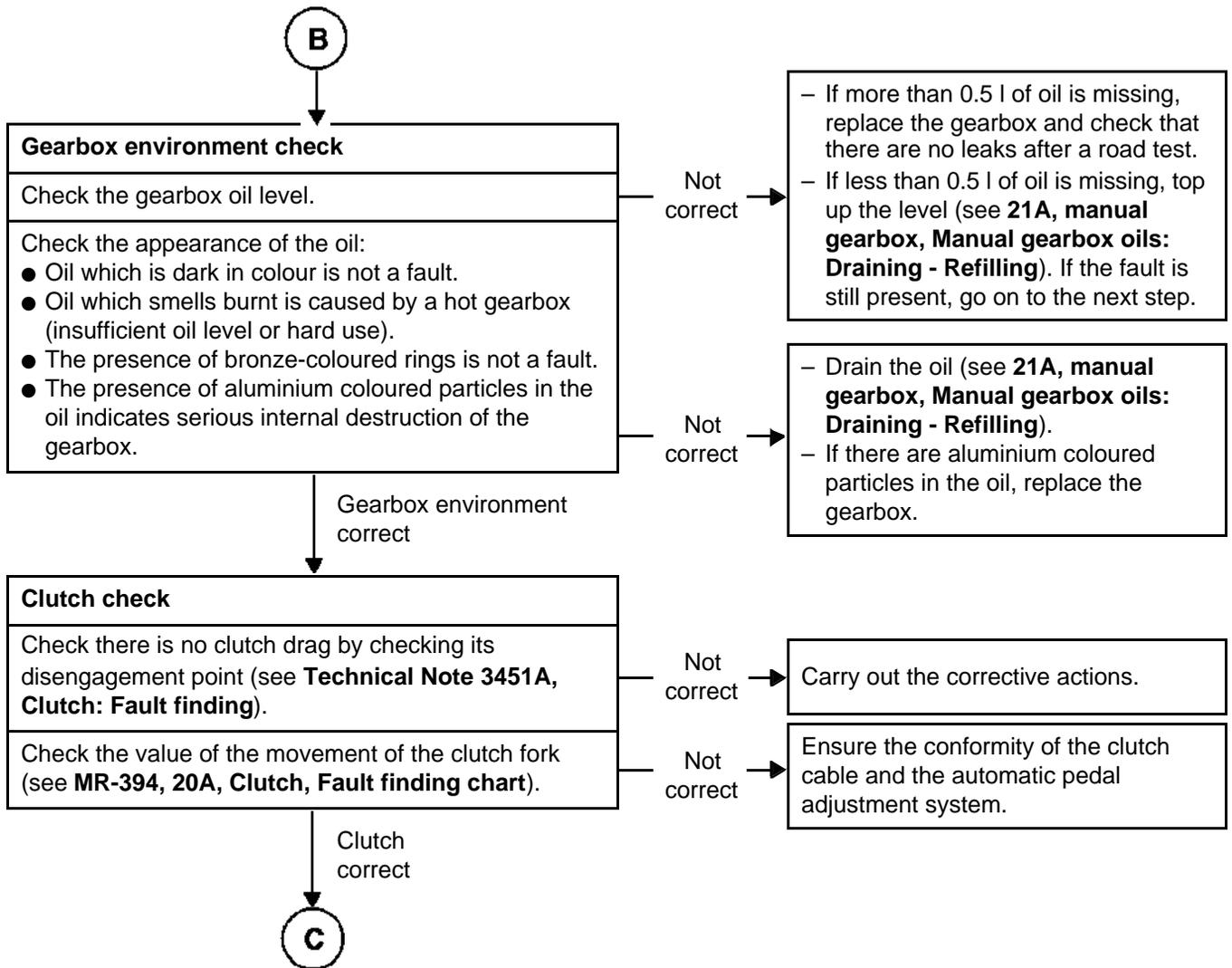


→ (A)

ALP 2 CONTINUED 2	
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<p><b>ALP 2 CONTINUED 3</b></p>	
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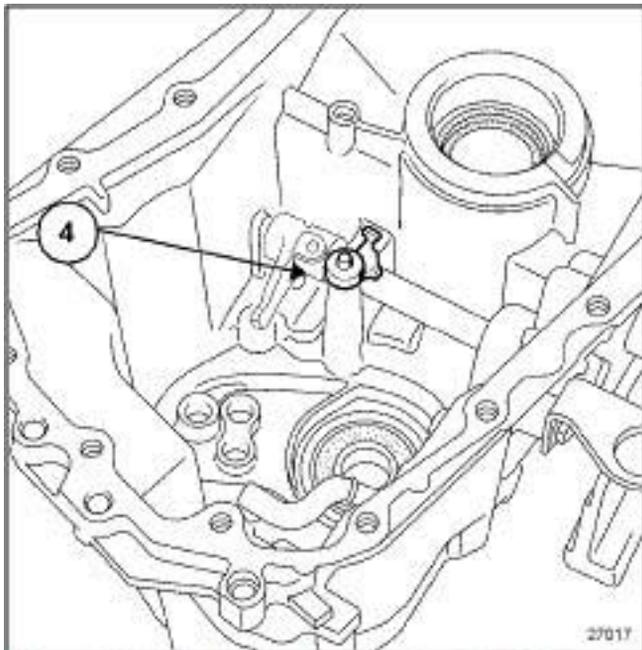
ALP 2 CONTINUED 4	
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C



Remove and open the gearbox.

In the case of a complaint about jamming when shifting from 5<sup>th</sup> to 4<sup>th</sup> 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**).

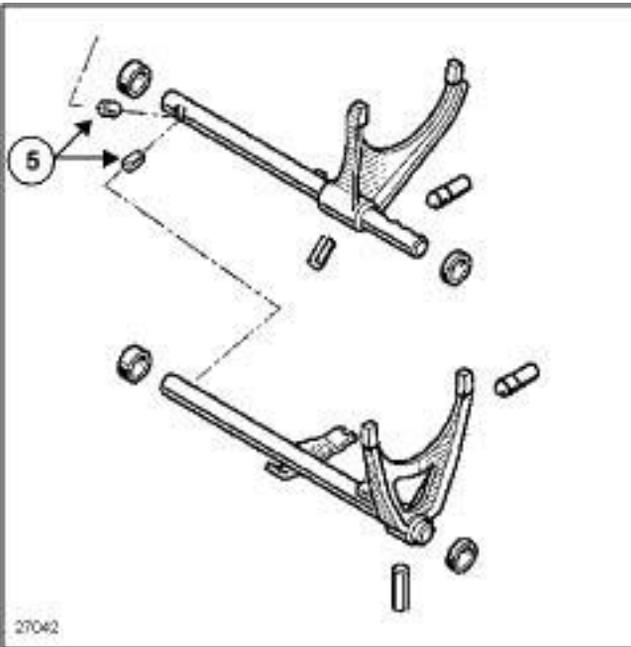
D

ALP 2 CONTINUED 5	
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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.

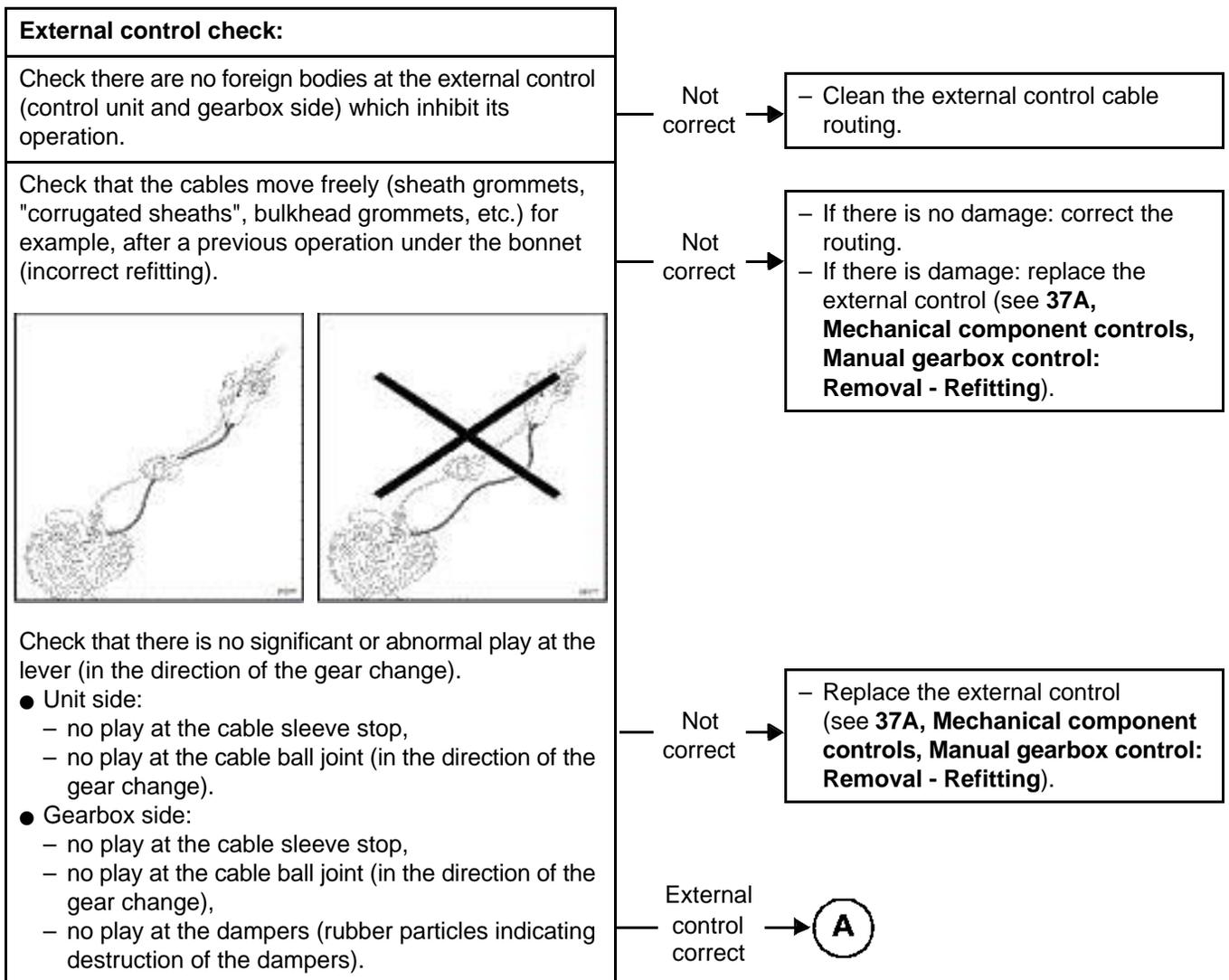
Locking shafts correct

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

\* see introduction

<b>ALP 3</b>	<b>Cable operated gearboxes jumping out of gear</b>
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<b>NOTES</b>	<ul style="list-style-type: none"> <li>– Before any operations, it is <b>ESSENTIAL</b> to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.</li> <li>– Check that the clutch pedal travel is not obstructed by the floor carpet.</li> <li>– 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.</li> </ul>
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<p>ALP 3 CONTINUED 1</p>	
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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).

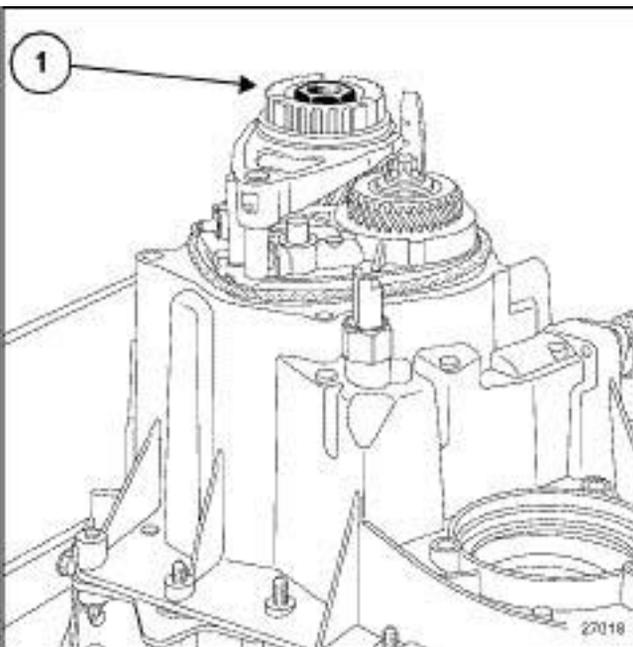
Engine and transmission assembly suspended mountings

**Checking the 5<sup>th</sup> 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 5<sup>th</sup>.

Not correct

Replace the 5<sup>th</sup> gear, gear supporting rings and fork assembly.



5<sup>th</sup> gear nut correct

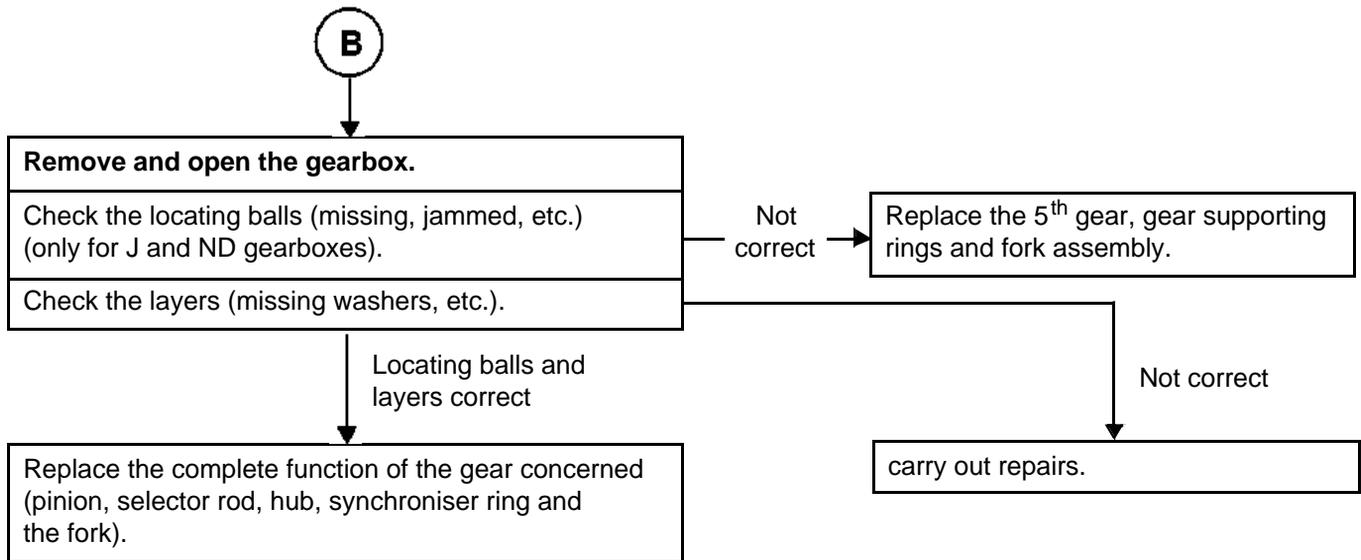
B

# INTRODUCTION TO FAULT FINDING

## Fault finding - Fault Finding Chart

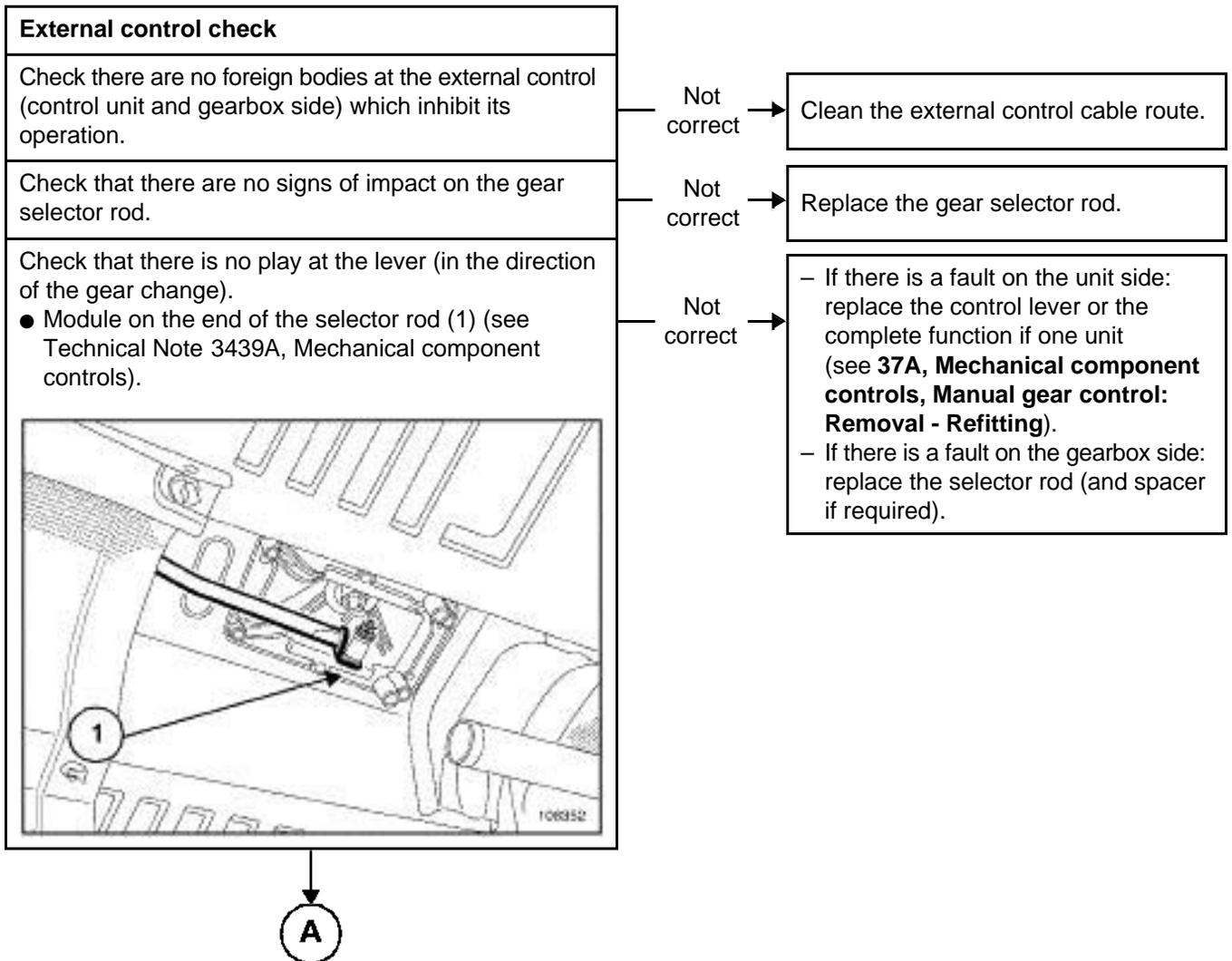
01E

<p>ALP 3 CONTINUED 2</p>	
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<b>ALP 4</b>	<b>Rod operated gearboxes jumping out of gear</b>
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<b>NOTES</b>	<ul style="list-style-type: none"> <li>- Before any operations, it is <b>ESSENTIAL</b> to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.</li> <li>- Check that the clutch pedal travel is not obstructed by the floor carpet.</li> <li>- 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.</li> </ul>
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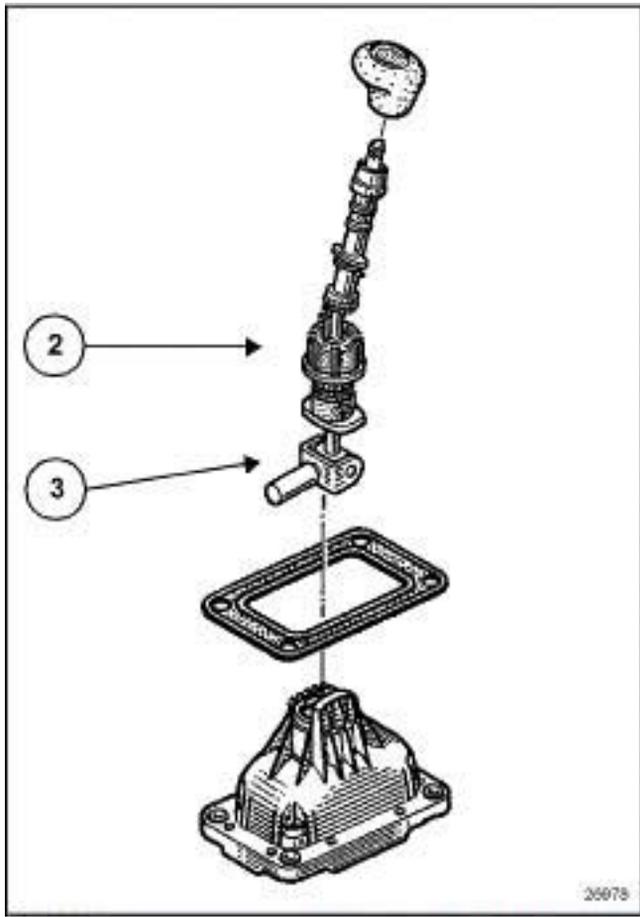
ALP 4  
CONTINUED 1

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).

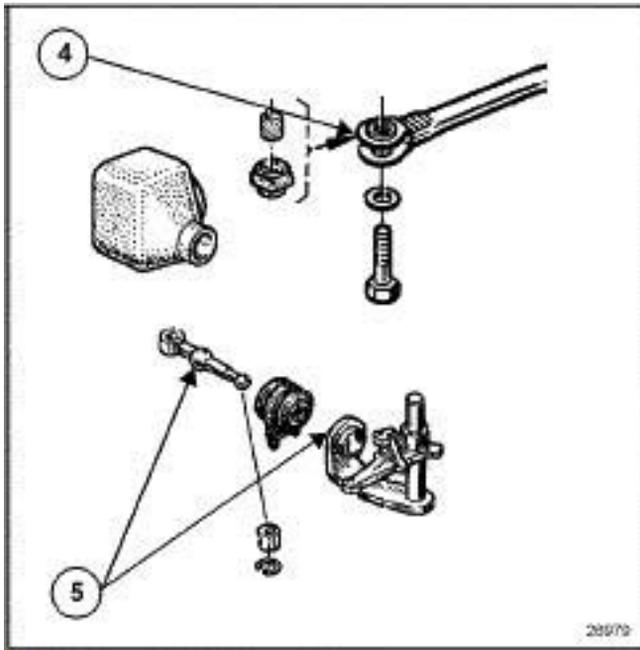


B

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

<p>ALP 4 CONTINUED 3</p>	
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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).

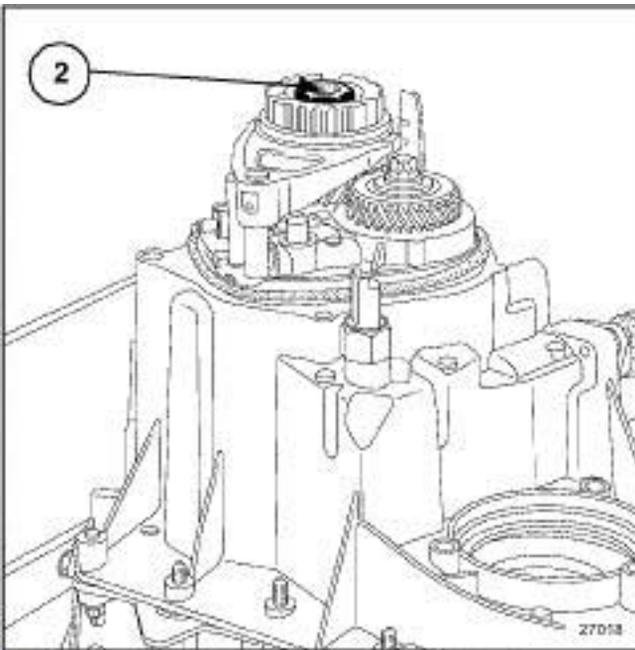
Engine and transmission assembly suspended mountings

**Checking the 5<sup>th</sup> gear nut on the input shaft (only on J gearbox)**

Not correct →

Replace the 5<sup>th</sup> gear, gear supporting rings and fork assembly.

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



5<sup>th</sup> gear nut correct

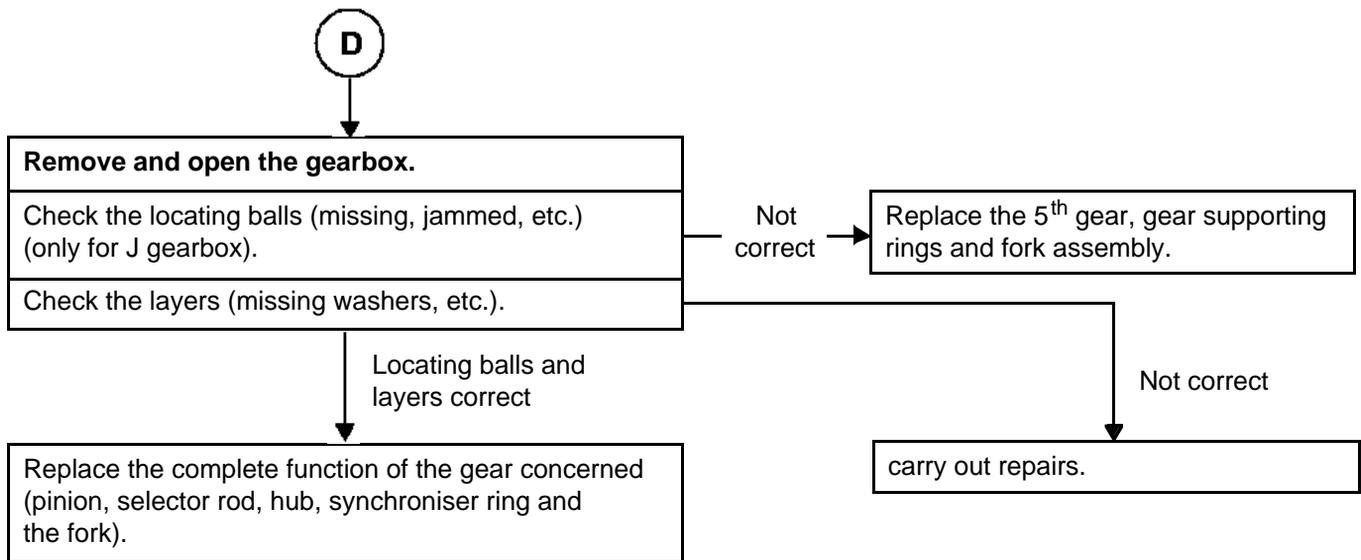
D

# INTRODUCTION TO FAULT FINDING

## Fault finding - Fault Finding Chart

01E

<p>ALP 4 CONTINUED 4</p>	
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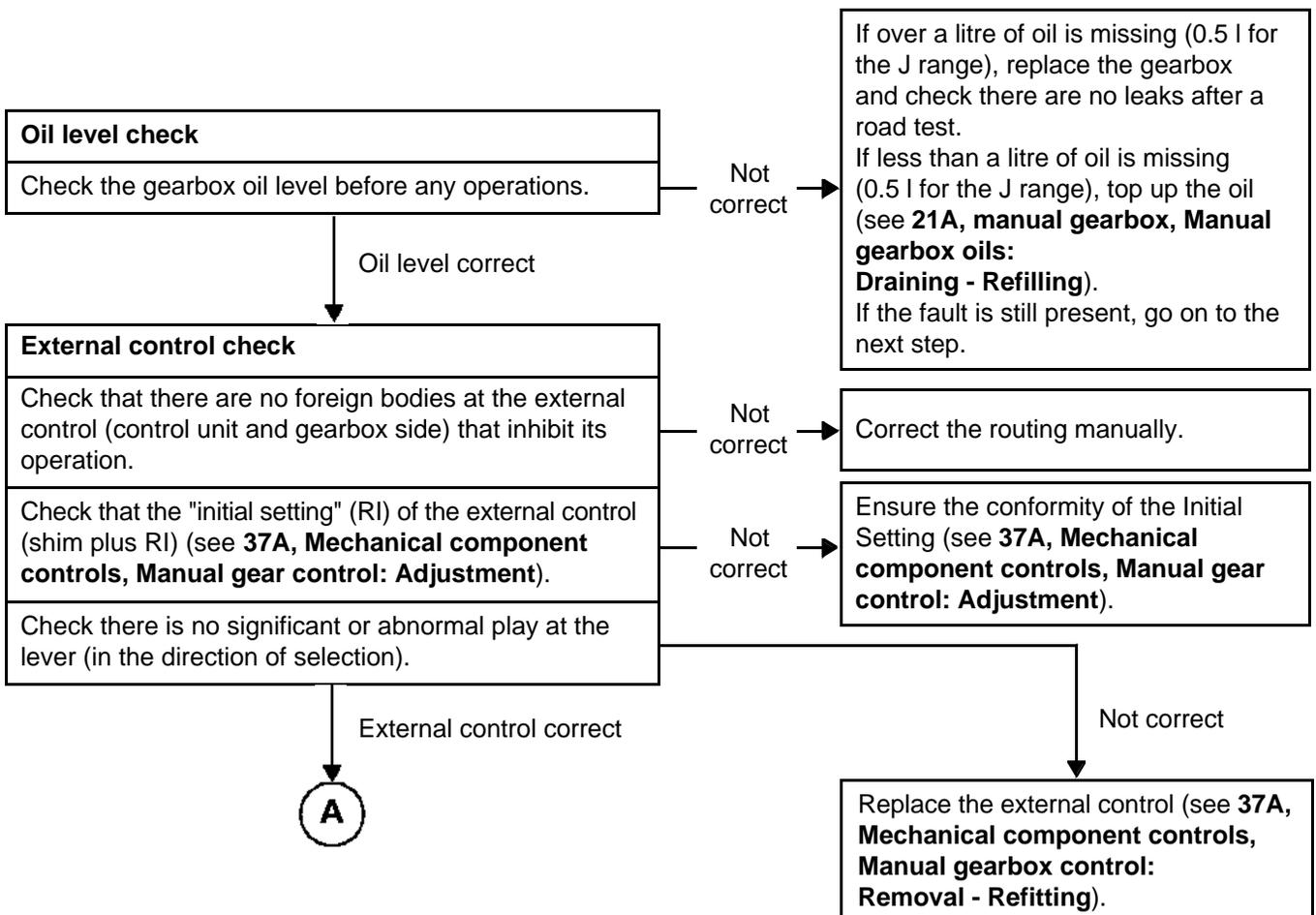
# INTRODUCTION TO FAULT FINDING

## Fault finding - Fault Finding Chart

01E

<b>ALP 5</b>	<b>Difficult or impossible to engage gears for cable operated gearboxes</b>
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<b>NOTES</b>	<ul style="list-style-type: none"> <li>- Before any operations, it is <b>ESSENTIAL</b> to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.</li> <li>- Check that the clutch pedal travel is not obstructed by the floor carpet.</li> <li>- 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.</li> </ul>
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<b>ALP 5 CONTINUED 1</b>	
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A

<p><b>Gearbox oil check</b></p> <p>Check the appearance of the oil:</p> <ul style="list-style-type: none"> <li>● Oil which is dark in colour is not a fault.</li> <li>● Oil which smells burnt is caused by a hot gearbox (insufficient oil level or hard use).</li> <li>● The presence of bronze-coloured rings is not a fault.</li> <li>● The presence of aluminium coloured particles in the oil indicates serious internal destruction of the gearbox.</li> </ul>	<p style="text-align: center;">Not correct →</p> <div style="border: 1px solid black; padding: 5px;"> <p>Drain the oil (see <b>21A, manual gearbox, manual gearbox oils: Draining - Refilling</b>). If there are aluminium coloured particles in the oil, replace the gearbox.</p> </div>
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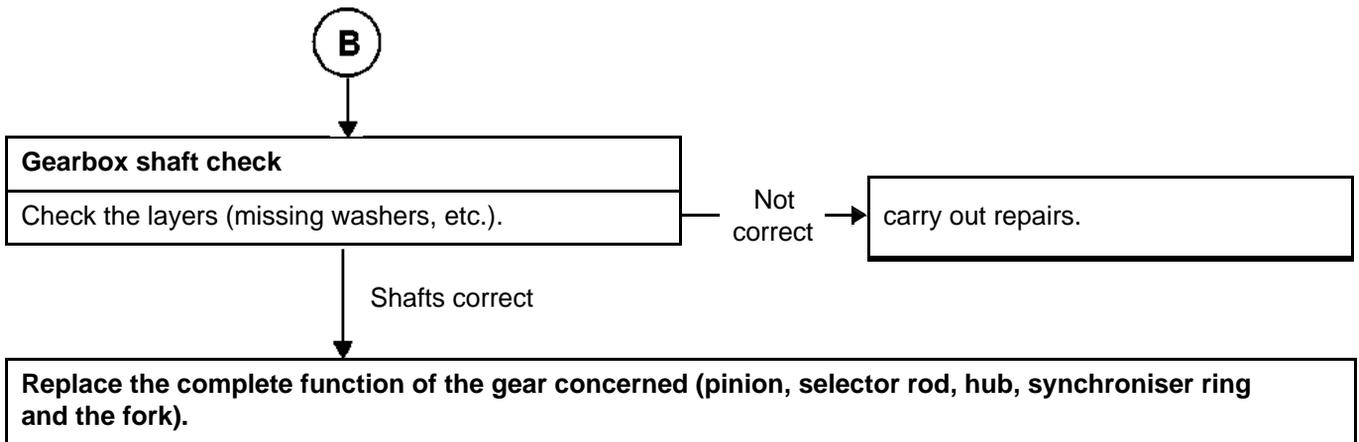
Gearbox oil correct

<p><b>Clutch check</b></p> <p>Check that there is no clutch drag by checking its disengagement point (see <b>Technical Note 3451A, Clutch: Fault finding</b>).</p>	<p style="text-align: center;">Not correct →</p> <div style="border: 1px solid black; padding: 5px;"> <p>Carry out the necessary corrective action.</p> </div>
<p>For hydraulic clutches, check that the clutch is operating correctly (see <b>MR-394, 20A, Clutch, Fault finding chart</b>).</p>	<p style="text-align: center;">Not correct →</p>
<p>For cable operated clutches, check:</p> <ul style="list-style-type: none"> <li>● The movement value of the clutch fork (see <b>20A, Clutch</b>).</li> <li>● For Logan: check the adjustment of the cable (see <b>20A, Clutch, Clutch thrust bearing: Removal - Refitting</b>).</li> </ul>	<p style="text-align: center;">Not correct →</p> <div style="border: 1px solid black; padding: 5px;"> <ul style="list-style-type: none"> <li>– Check the condition of the clutch cable and the automatic pedal adjustment system.</li> <li>– For Logan: ensure the conformity of the adjustment of the cable (see <b>20A, Clutch, Clutch thrust bearing: Removal - Refitting</b>).</li> </ul> </div>

Clutch correct

B

ALP 5 CONTINUED 2	
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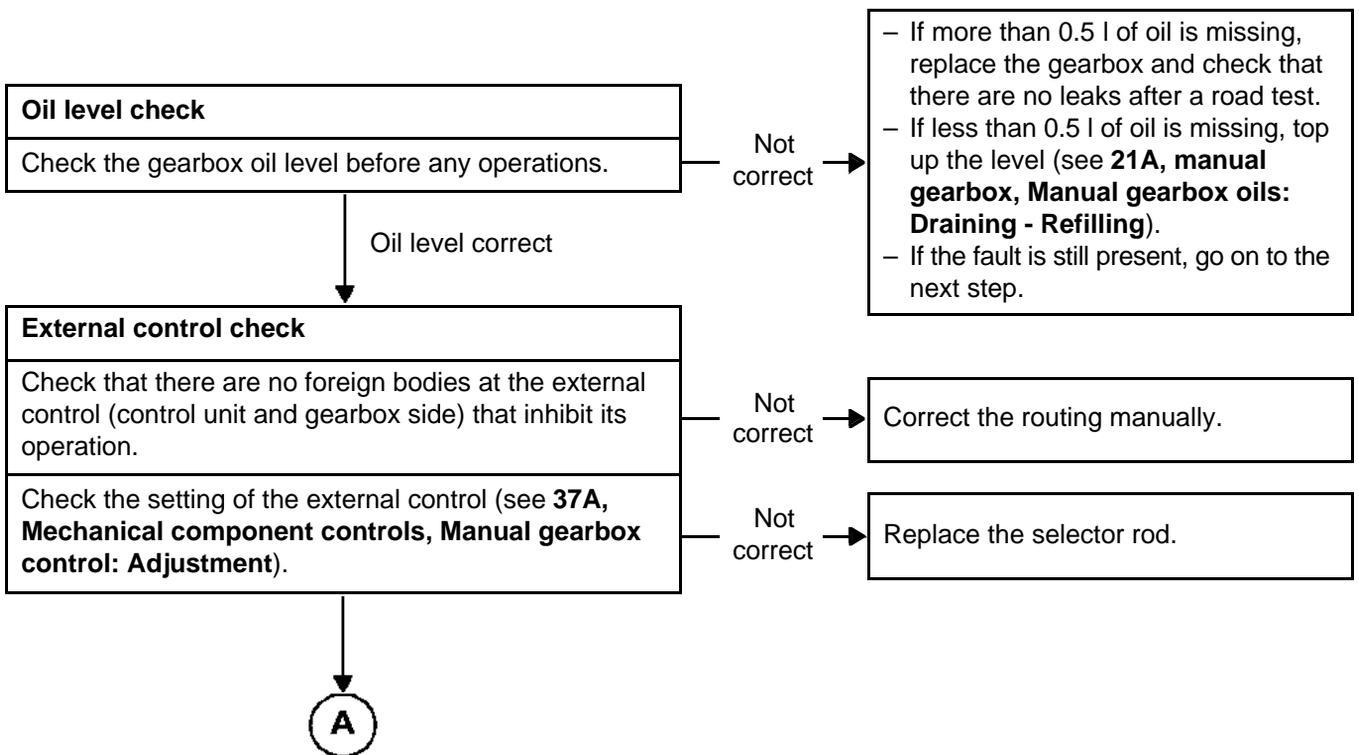
# INTRODUCTION TO FAULT FINDING

## Fault finding - Fault Finding Chart

01E

<b>ALP 6</b>	<b>Difficult or impossible to engage gears for rod operated gearboxes</b>
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<b>NOTES</b>	<ul style="list-style-type: none"> <li>- Before any operations, it is <b>ESSENTIAL</b> to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.</li> <li>- Check that the clutch pedal travel is not obstructed by the floor carpet.</li> <li>- 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.</li> </ul>
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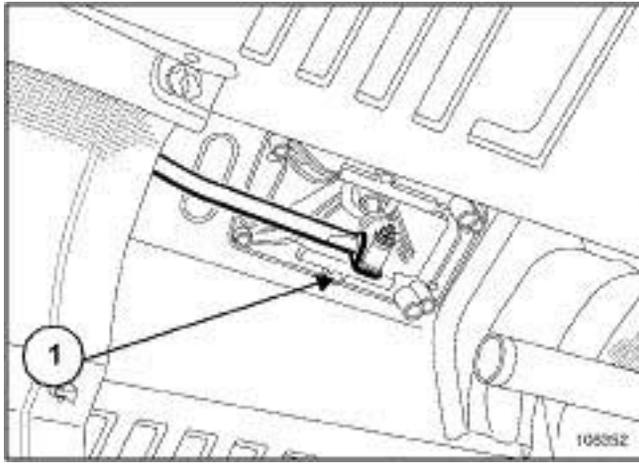


ALP 6 CONTINUED 1	
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A

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

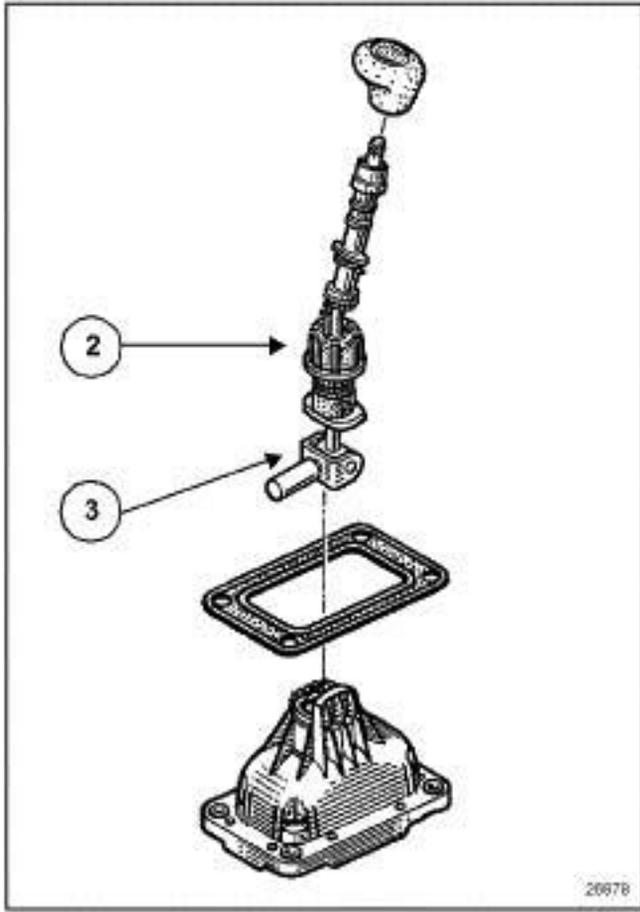
ALP 6  
CONTINUED 2

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).

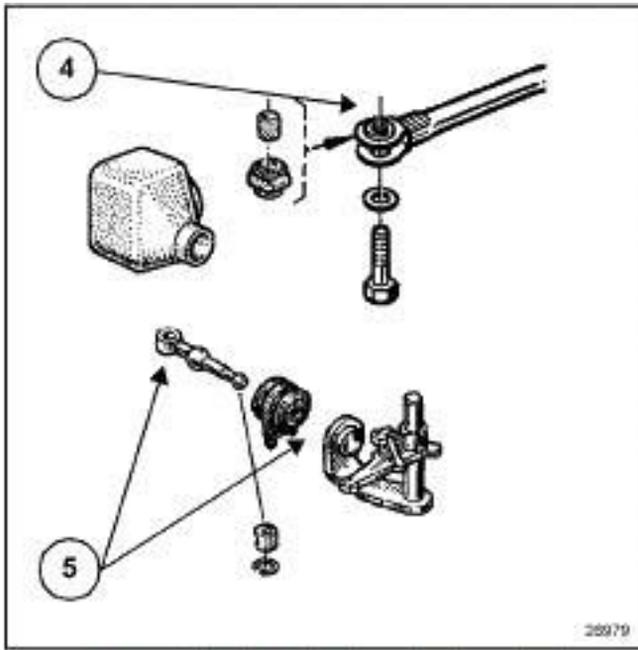


C

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

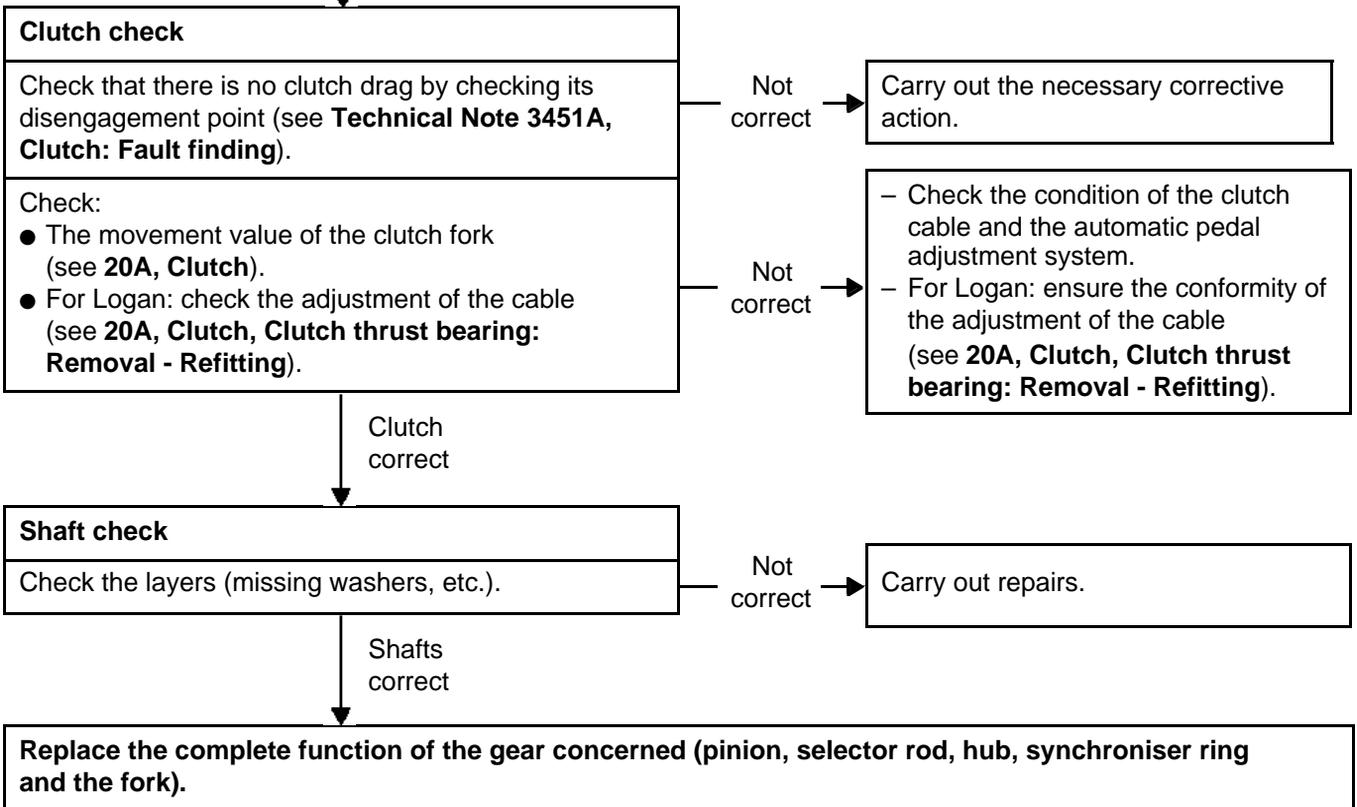
- Drain the oil (see 21A, manual gearbox, Manual gearbox oils: Draining - Refilling).
- If there are aluminium coloured particles in the oil, replace the gearbox.

Gearbox oil correct

D

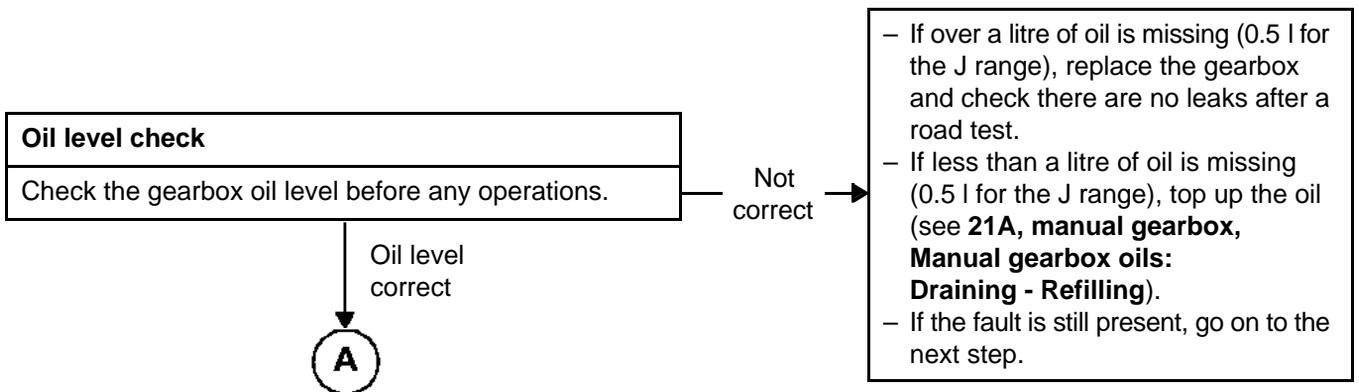
<p><b>ALP 6 CONTINUED 4</b></p>	
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D



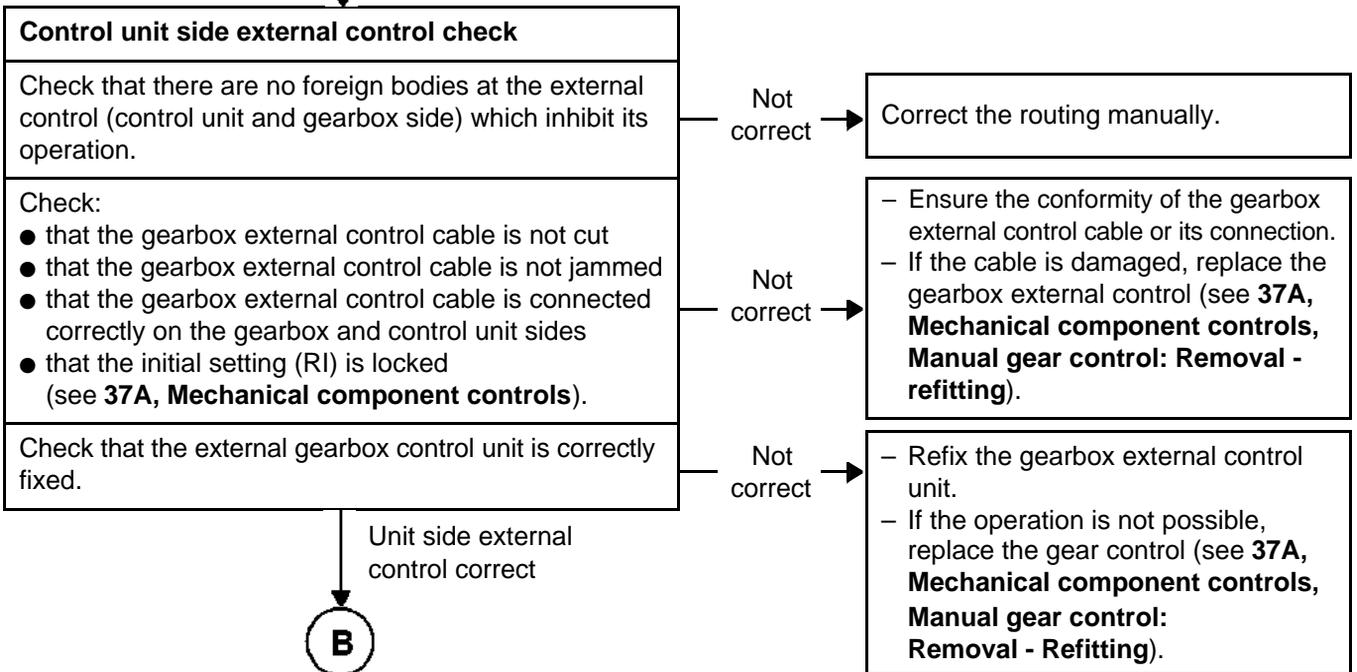
ALP 7	Gearbox locked or ineffective for cable operated gearboxes
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NOTES	<ul style="list-style-type: none"><li>- Before any operations, it is <b>ESSENTIAL</b> to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.</li><li>- Check that the clutch pedal travel is not obstructed by the floor carpet.</li><li>- 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.</li></ul>
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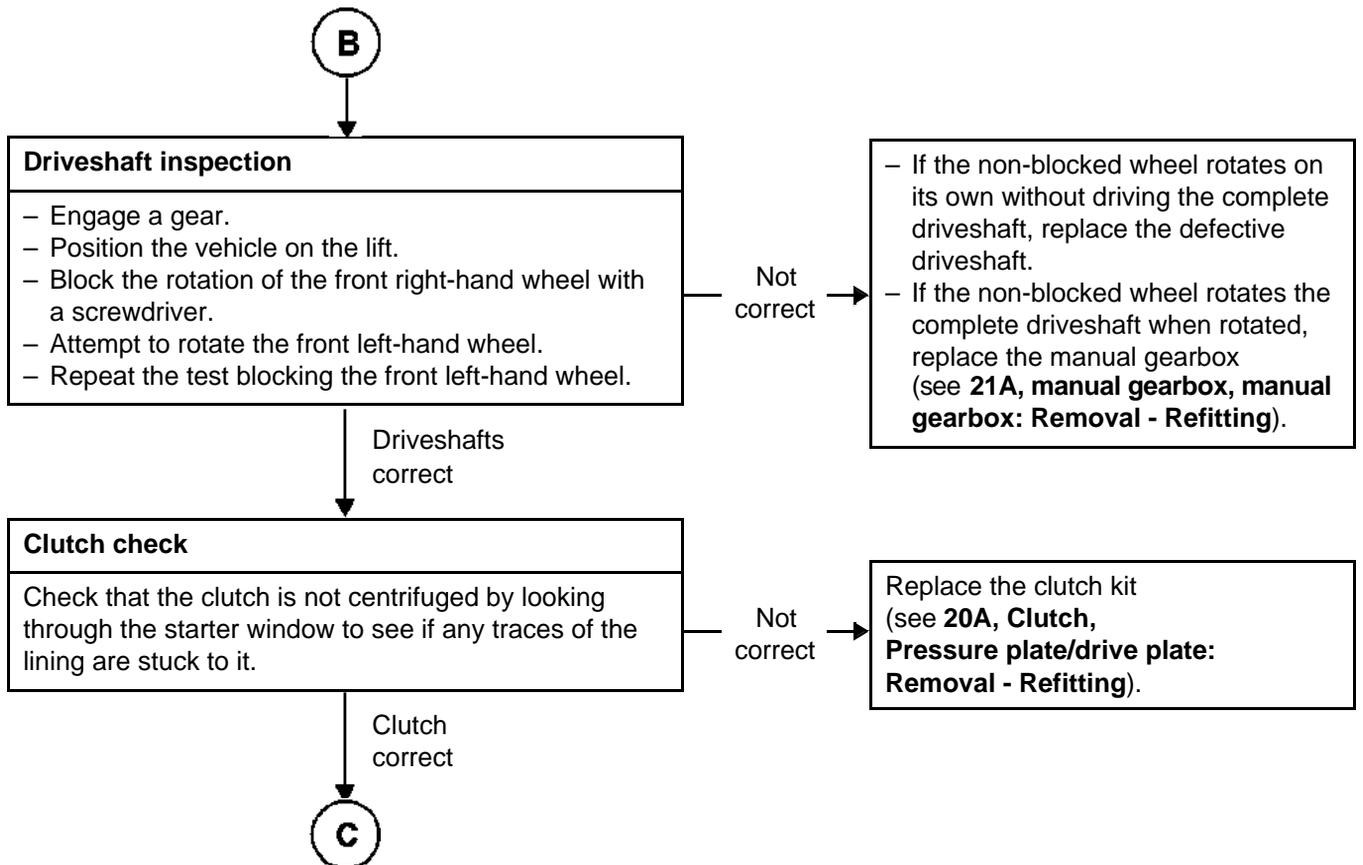


<p><b>ALP 7 CONTINUED 1</b></p>	
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(A)

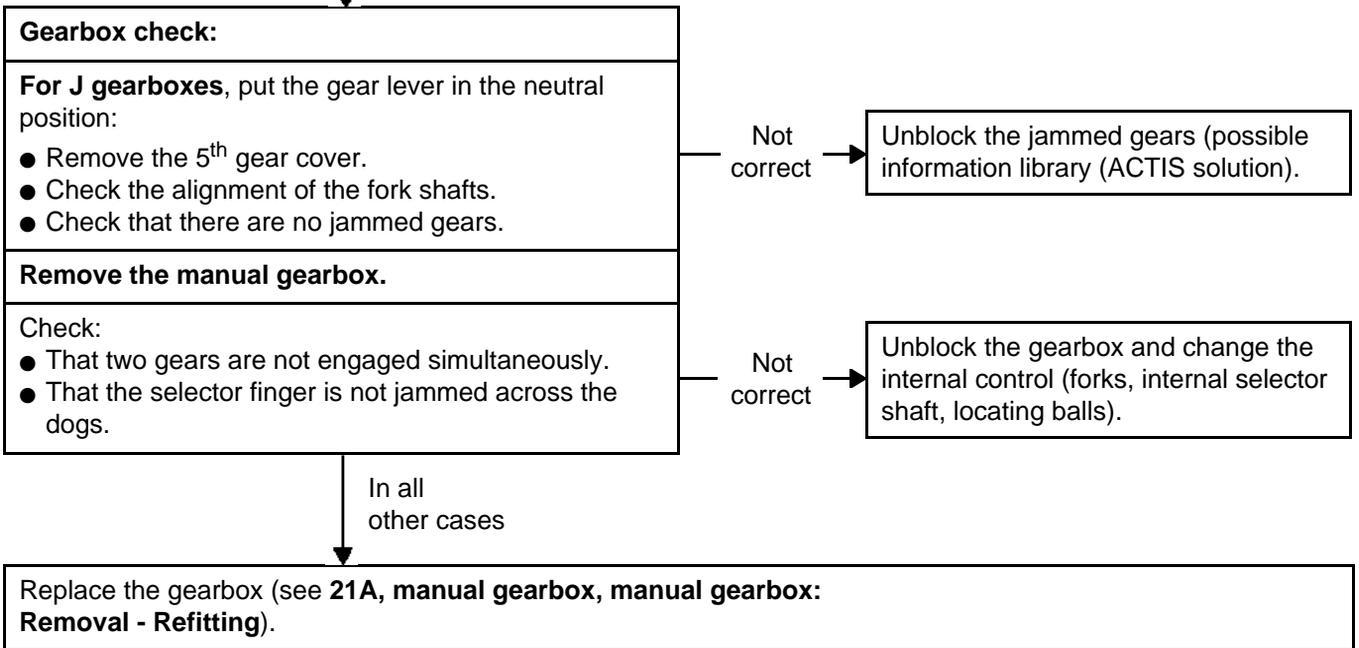


<b>ALP 7 CONTINUED 2</b>	
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<b>ALP 7 CONTINUED 3</b>	
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C



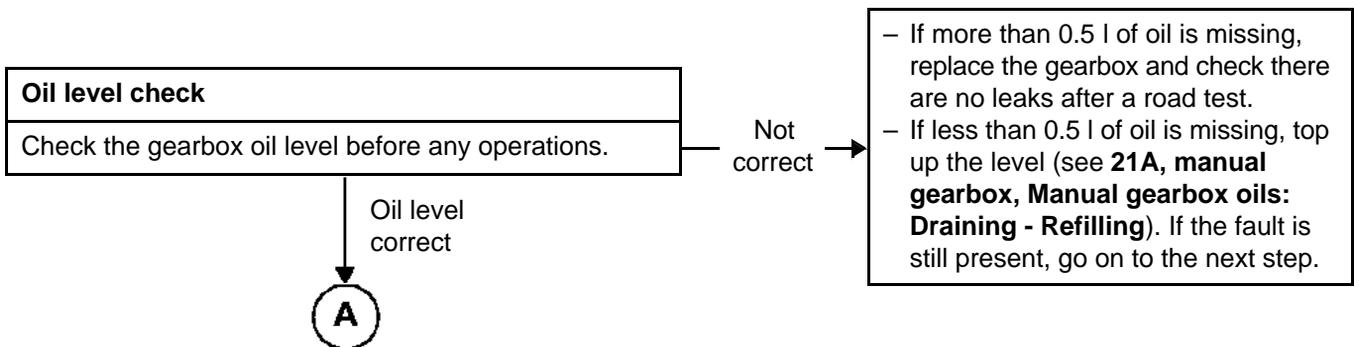
# INTRODUCTION TO FAULT FINDING

## Fault finding - Fault Finding Chart

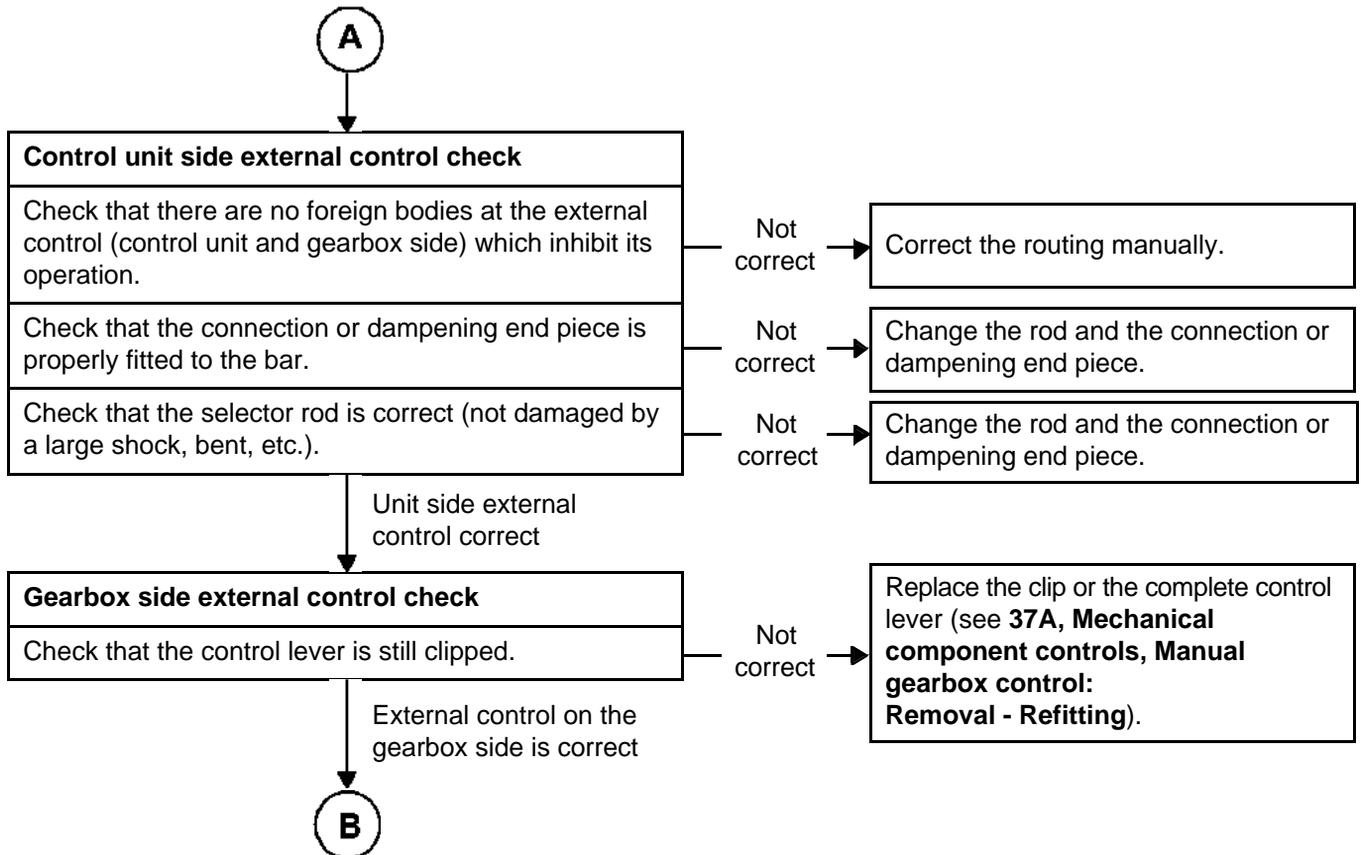
01E

ALP 8	Gearbox locked or ineffective for rod operated gearboxes
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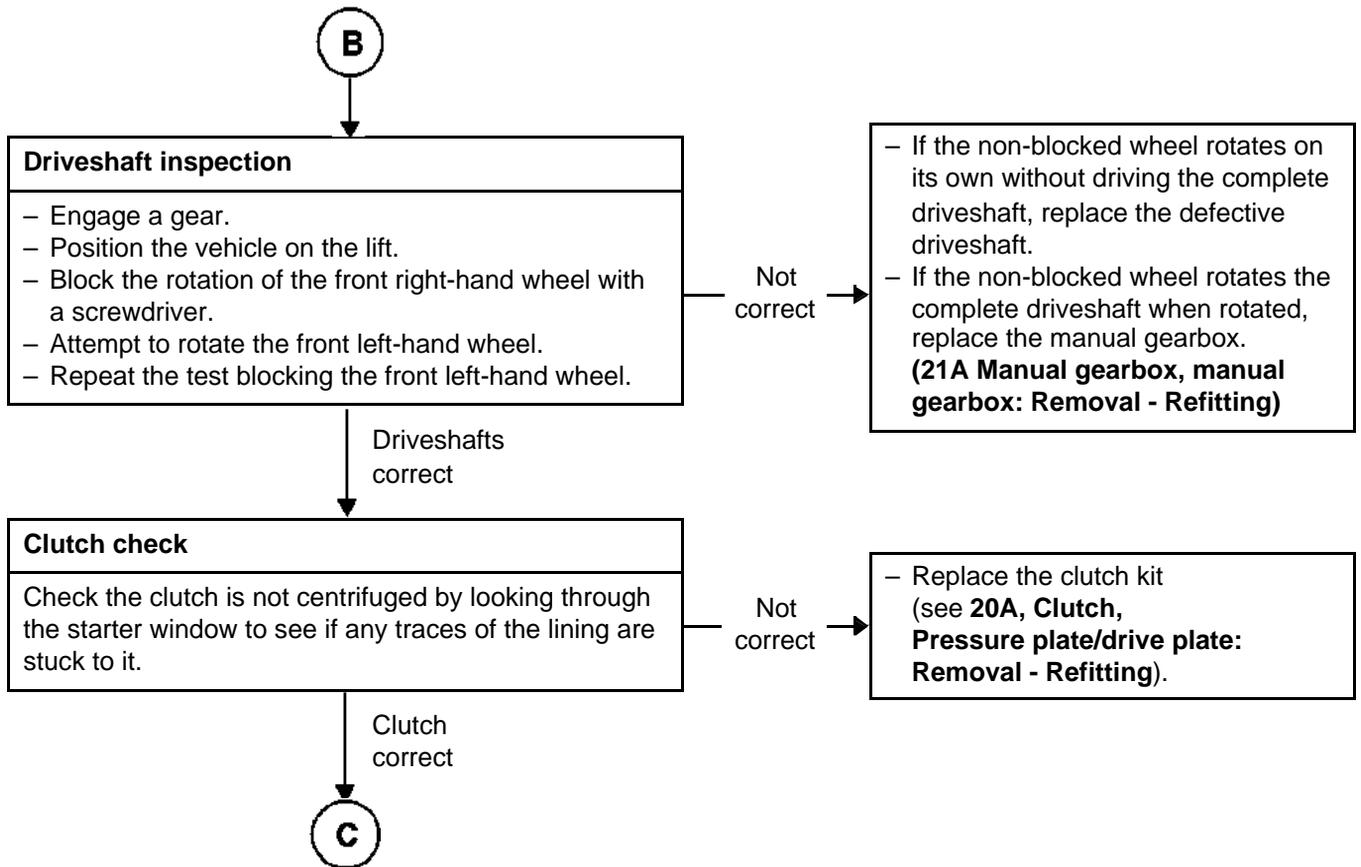
NOTES	<ul style="list-style-type: none"><li>- Before any operations, it is <b>ESSENTIAL</b> to read the entire ALP and the information library (ACTIS solution) relating to the customer complaints.</li><li>- Check that the clutch pedal travel is not obstructed by the floor carpet.</li><li>- The customer notices a difference between the functions changed and those that were retained. Inform the customer of the importance of running in a gearbox.</li></ul>
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<p><b>ALP 8 CONTINUED 1</b></p>	
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<b>ALP 8 CONTINUED 2</b>	
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ALP 8 CONTINUED 3	
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