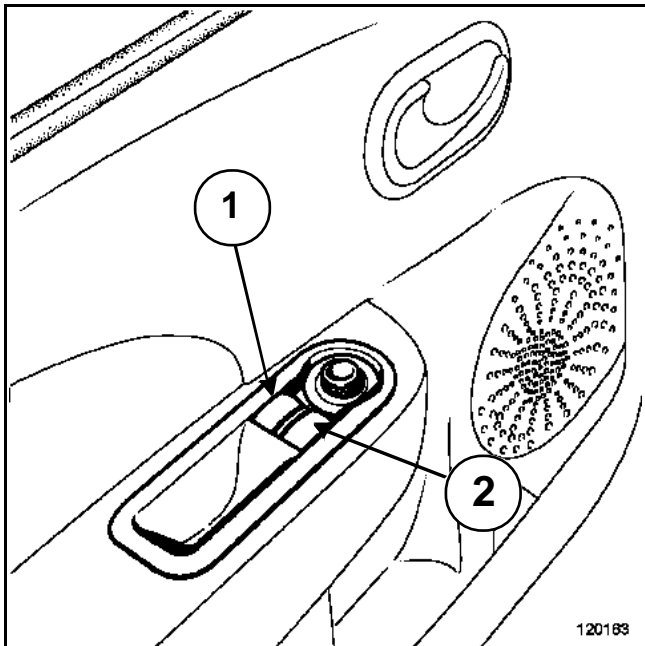


TWINGO

8 Electrical equipment

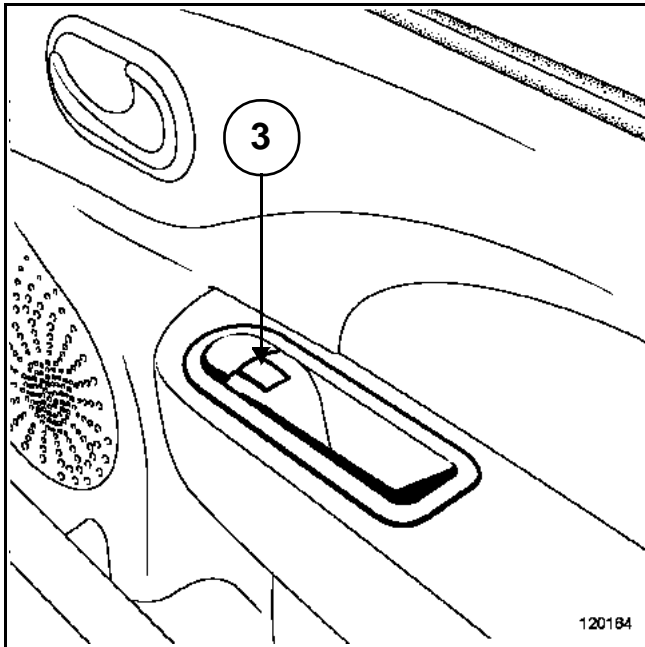
87D ELECTRIC WINDOWS - SUNROOF

Electric window: List and location of components	87D - 2
Electric windows: Role of components	87D - 3
Electric windows: Operating diagram	87D - 4
Electric windows: Function	87D - 5
Electric windows: Defect and safe modes	87D - 6
Electric windows: Initialisation	87D - 7
Electric window fault finding - Customer complaints	87D - 8
Electric windows - Fault finding chart	87D - 9
Electric windows: List and location of components	87D - 36
Electric sunroof: Component functions	87D - 37
Electric sunroof: Operating diagram	87D - 38
Electric sunroof: Function	87D - 39
Electric sunroof: Defect and safe modes	87D - 40
Electric sunroof: Initialisation	87D - 41
Electric sunroof fault finding - Customer complaints	87D - 42
Electric sunroof - Fault finding chart	87D - 43



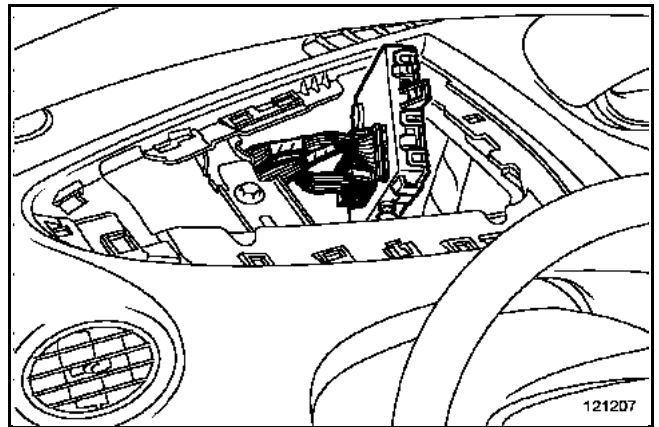
Electric window switch plate on driver's side:

- 1 Driver's electric window switch
- 2 Passenger electric window switch



Electric window switch plate on passenger's side:

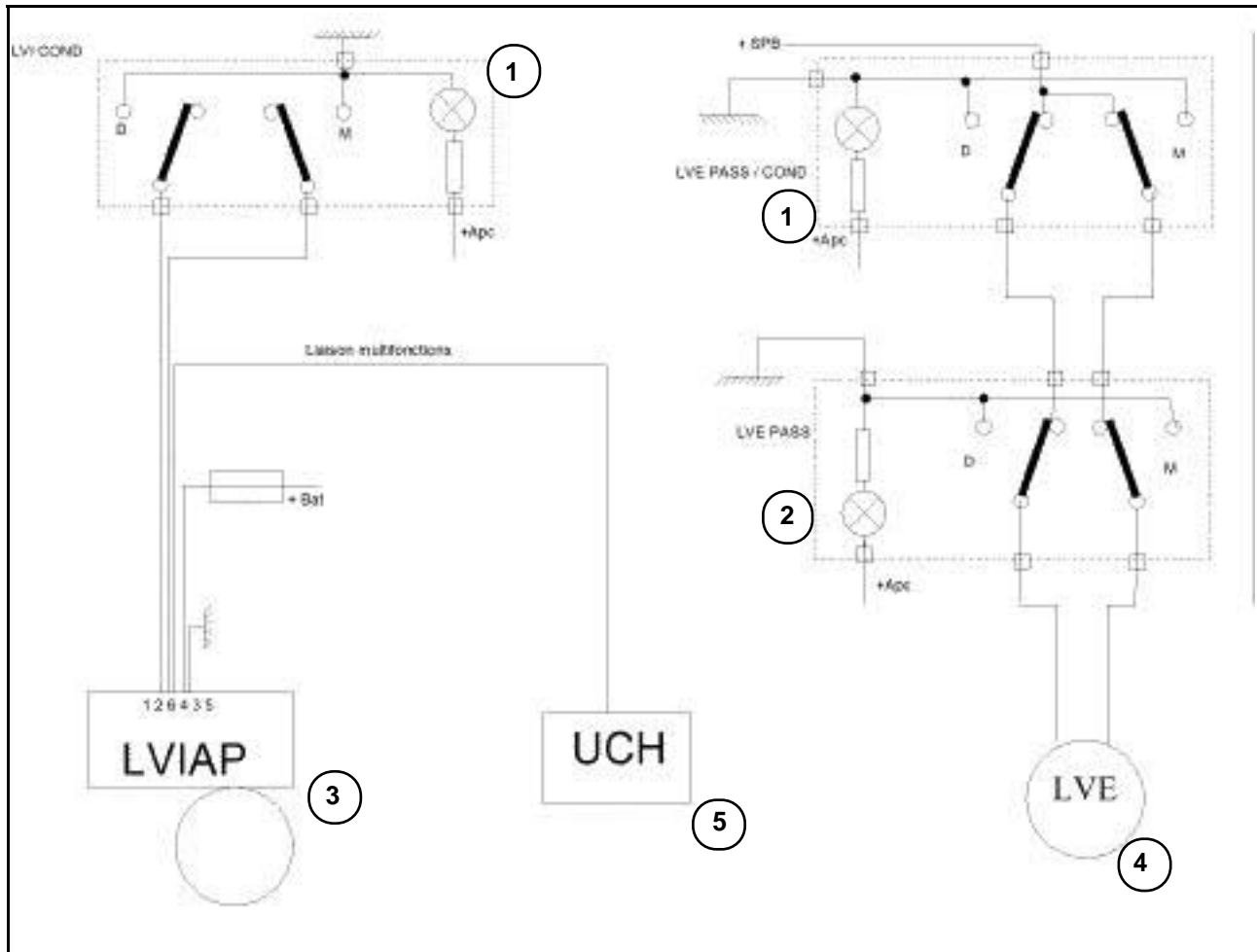
- 3 Passenger electric window switch



UCH

- The control panel on the driver's side enables all of the windows to be opened or closed (on the driver's and passenger's side).
- The passenger electric window switch only lowers or raises the window on the passenger side.
- The UCH controls the operation of the one-touch and anti-pinch control windows.
- The electric window winder motor enables the window to be opened or closed.

ONE-TOUCH ELECTRIC WINDOWS (with anti-pinch)



- 1 Driver's electric window switch
- 2 Passenger's electric window switch
- 3 Electric window winder motor with electronic unit (computer) controlling one-touch and anti-pinch functions
- 4 Simple electric window winder motor without a computer
- 5 UCH (authorisation to operate with multifunction connection)

Note:

The one-touch electric window switch is different from the electric window switches.

Types

The vehicle can be fitted with two types of front window winders:

- Driver's and passengers' electric windows.
- Driver's anti-pinch and one-touch electric window / passenger's electric window.

Electric windows

The motor feed goes via the switch. The switch reverses the polarity to the motor terminals to lower or raise the window.

One-touch electric window

The UCH controls this window, both its upward and downward movement, in manual or automatic mode (one-touch).

The UCH can only be controlled by unstable position switches (one up position, one down position). The electrical signal received by the unit means that the input used is connected to earth.

The switch technology employed means that automatic mode cannot be activated directly (double contact technology). That is why the electric window switches have two up positions (contacts) and two down positions (contacts).

Electric mode is activated first (1st contact) followed by one-touch mode (2nd contact). The direction of movement of the window is determined by the first input (connection to earth).

First example

Switch pressed in the **down** direction:

1st contact = **down** switch earthed

2nd contact = **up** switch earthed

The electronic unit activates **lowering** of the window in **one-touch** mode.

Second example

Switch pressed in the **up** direction:

1st contact = **up** switch earthed

2nd contact = **down** switch earthed

The electronic unit activates raising of the window in **one-touch** mode.

ANTI-PINCH

The anti-pinch function is a statutory requirement, which is also managed by the electronic unit. This stops the window rising in one-touch mode when it meets an obstacle (e.g. fingers, branches, etc.)

On detecting an abnormal force (more than 80N) in a 250 mm area (between the upper stop of the window and the window), the system causes the window to lower approximately 50 mm.

WARNING

The anti-pinch function only works if the windows have been correctly initialised (see **Initialisation**).

INHIBITING THE ANTI-PINCH FUNCTION

The window or window mechanism may be subject to various mechanical problems (jammed by ice, snow or mechanical distortion due to an accident), which can trigger the anti-pinch function. It is possible to inhibit this function so that the window can be closed.

Procedure:

- 1) Closing the window in one-touch mode. The window arrives at the point of resistance, then drops back a few centimetres.
- 2) Close the window in one-touch mode. The window arrives at the point of resistance again, then drops back a few centimetres.
- 3) Close the window, the anti-pinch function is inhibited. The window closes in manual mode continuously without the anti-pinch function.

WARNING

To obtain one-touch mode and/or manual mode operation (opening and closing) and the anti-pinch function, the electronic system built into the motor must be correctly initialised.

Note:

A non-initialised system will function while the control switch is pressed, but the window will only travel a maximum of **50 mm**. Every time the switch is pressed the window will travel a similar distance until it reaches the top stop.

Procedure:

Raise the window to the upper limit and maintain the feed at the upper stop for at least **2 seconds**.

Causes of loss of initialisation:

- The electronic unit feed is cut off while the electric window is operating or when the UCH is authorising the operation.
- The theoretical maximum travel goes beyond the upper stop.
- If the correct position was not initialised (obstacle), operation of the window beyond that point will be in jerks (50 mm stages).

NOTES

Only refer to these customer complaints after performing a **complete check** with the **diagnostic tool**.

DRIVER AND PASSENGER ELECTRIC WINDOWS

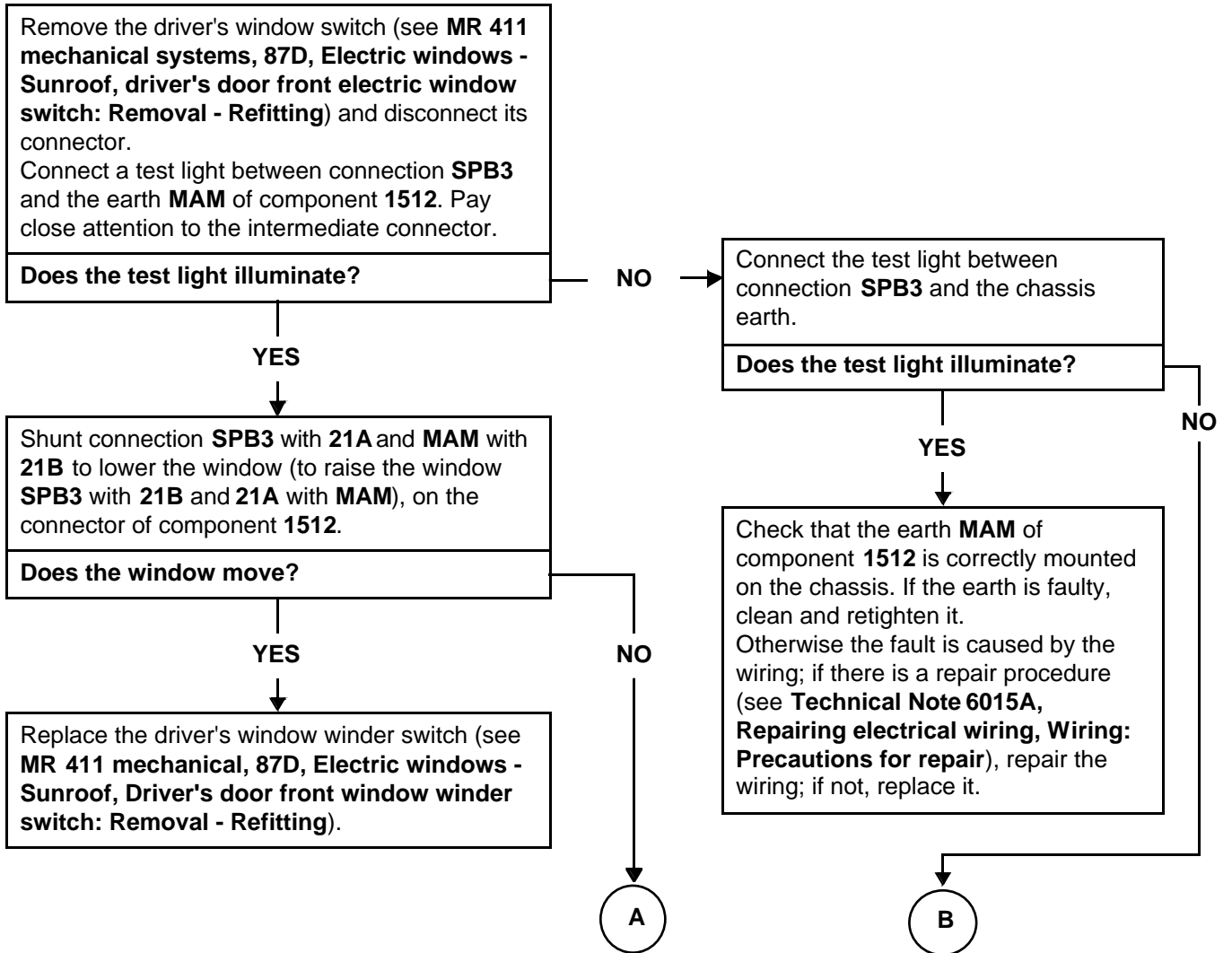
- | | | |
|--|---|-------|
| | NO ELECTRIC WINDOW OPERATION | ALP 1 |
| | ONLY THE DRIVER'S WINDOW DOES NOT OPERATE AT ALL | ALP 2 |
| | THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH THE PASSENGER SWITCH ONLY | ALP 3 |
| | THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH ANY SWITCH | ALP 4 |

DRIVER'S ONE-TOUCH ELECTRIC WINDOWS AND PASSENGER ELECTRIC WINDOW

- | | | |
|--|---|-------|
| | ONLY THE DRIVER'S WINDOW DOES NOT OPERATE AT ALL | ALP 5 |
| | THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH THE DRIVER'S SWITCH ONLY | ALP 6 |
| | THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH ANY SWITCH | ALP 7 |
| | THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH THE PASSENGER SWITCH ONLY | ALP 8 |
| | DRIVER'S WINDOW RISES JERKILY IN 50 MM STAGES | ALP 9 |

ALP 1	No electric window operation
Applies to:	Driver and passenger electric windows Left-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Check that the fuses are sound. Use a 21 W test light.</p>
--------------	--



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

**ALP 1
CONTINUED**

A

Connect a test light between connections **21B** and **21A** of component **203**.
 Reconnect the electric window switch and operate it. Does the test light illuminate?

YES

Replace the driver's window winder motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

NO

B

Continuity fault on connection **SPB3** between components **1512** and **1016**. Pay close attention to the intermediate connector.
 If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

Continuity fault on connections **21A** and/or **21B** between components **1512** and **203**.
 If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

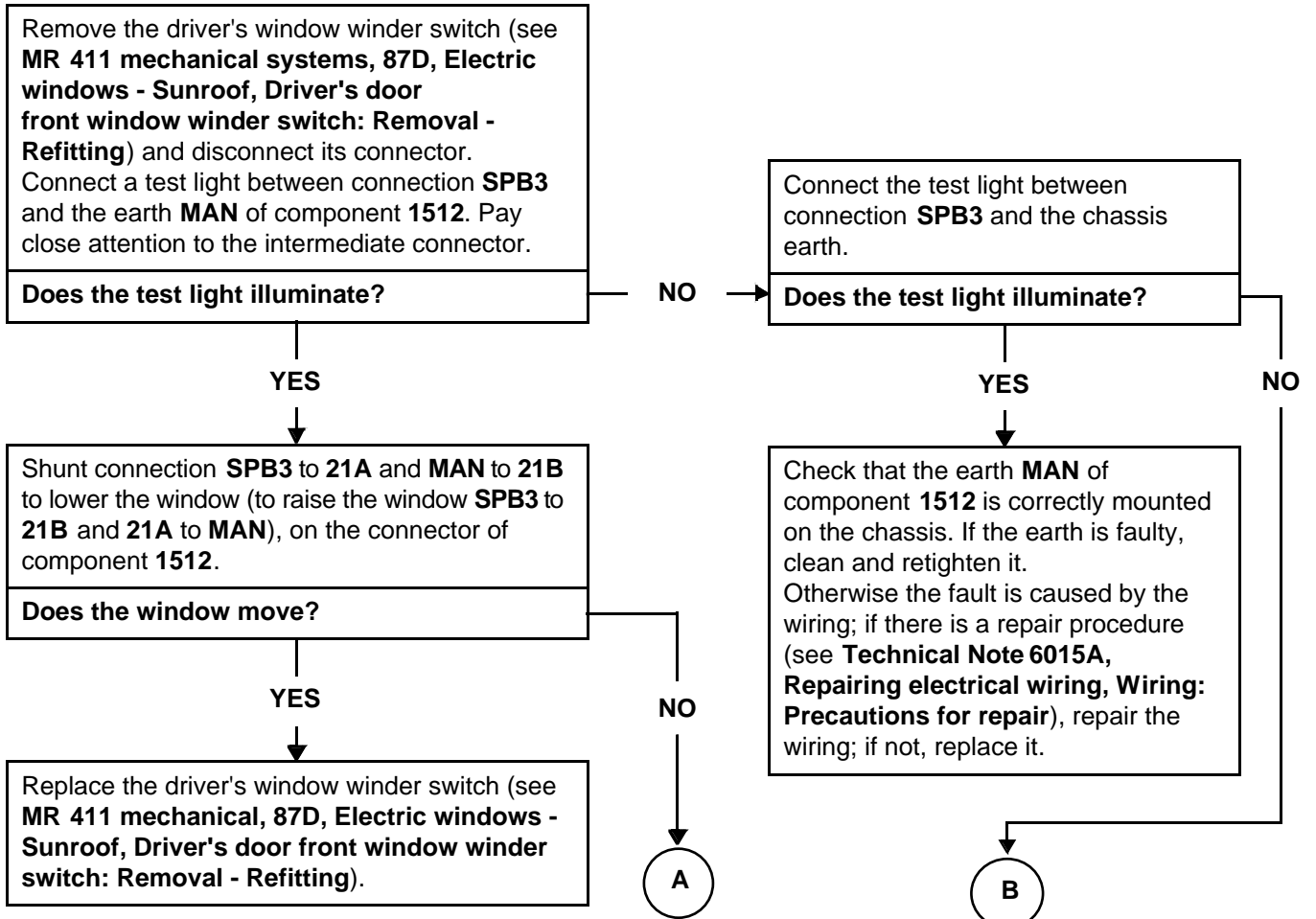
Run fault finding using **ALP 4**.

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see **Customer complaints**).

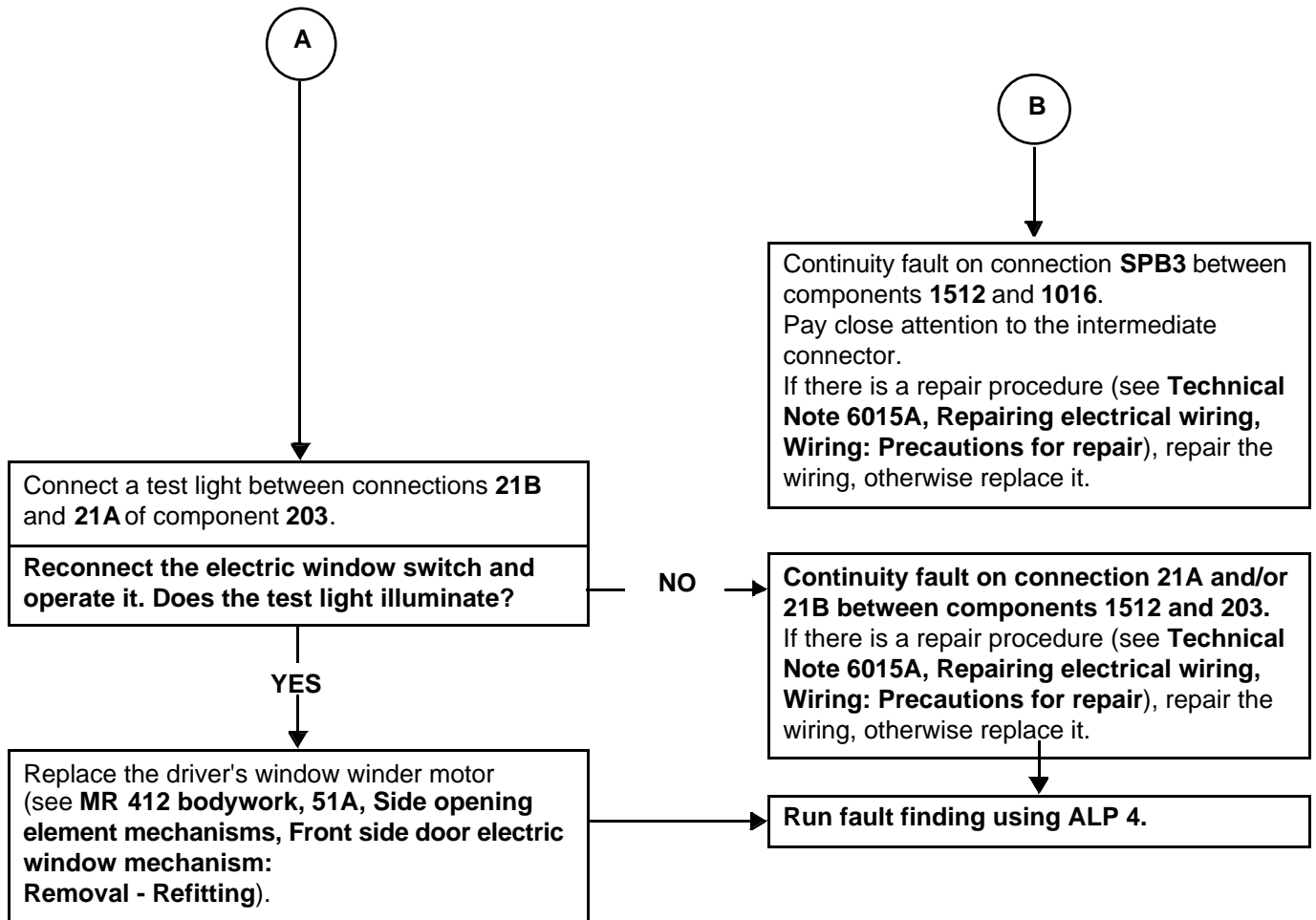
ALP 1	No electric window operation
Applies to:	Driver and passenger electric windows Right-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Check that the fuses are sound. Use a 21 W test light.</p>
--------------	--



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

**ALP 1
CONTINUED**

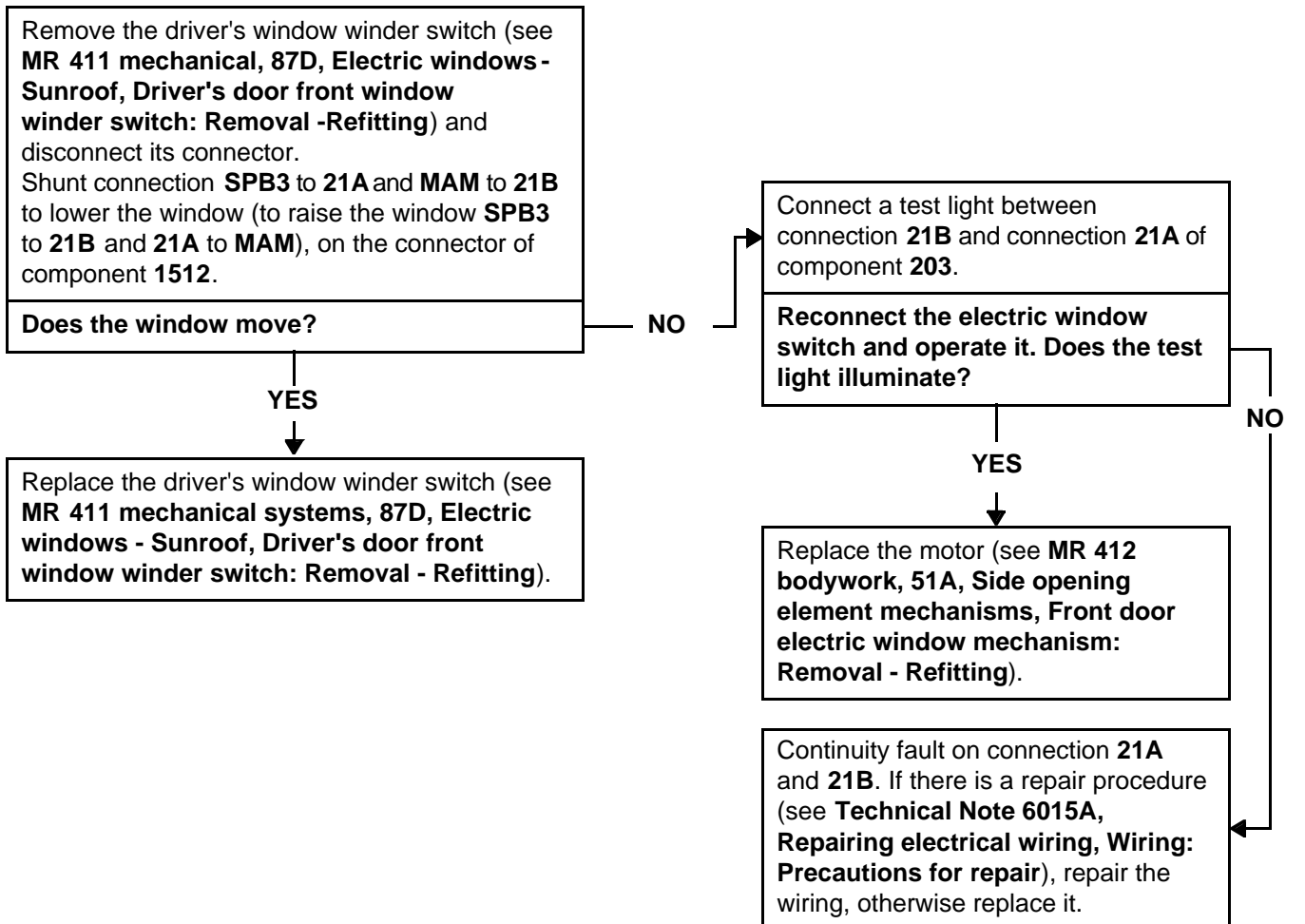


AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see **Customer complaints**).

ALP 2	Only the driver's window does not operate at all
Applies to:	Driver and passenger electric windows Left-hand drive vehicle

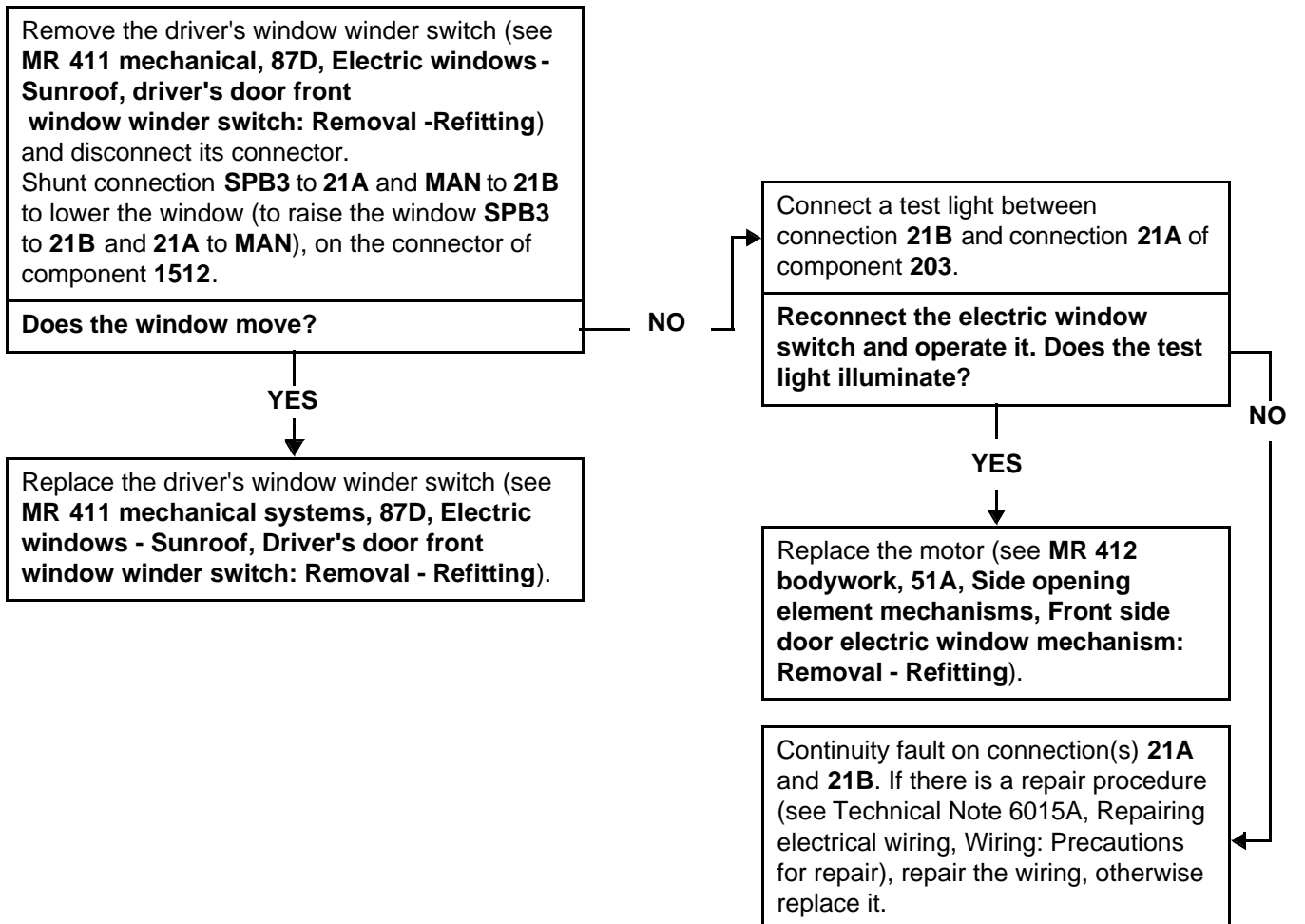
NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Use a 21 W test light.</p>
--------------	---



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

ALP 2	Only the driver's window does not operate at all
Applies to:	Driver and passenger electric windows Right-hand drive vehicle

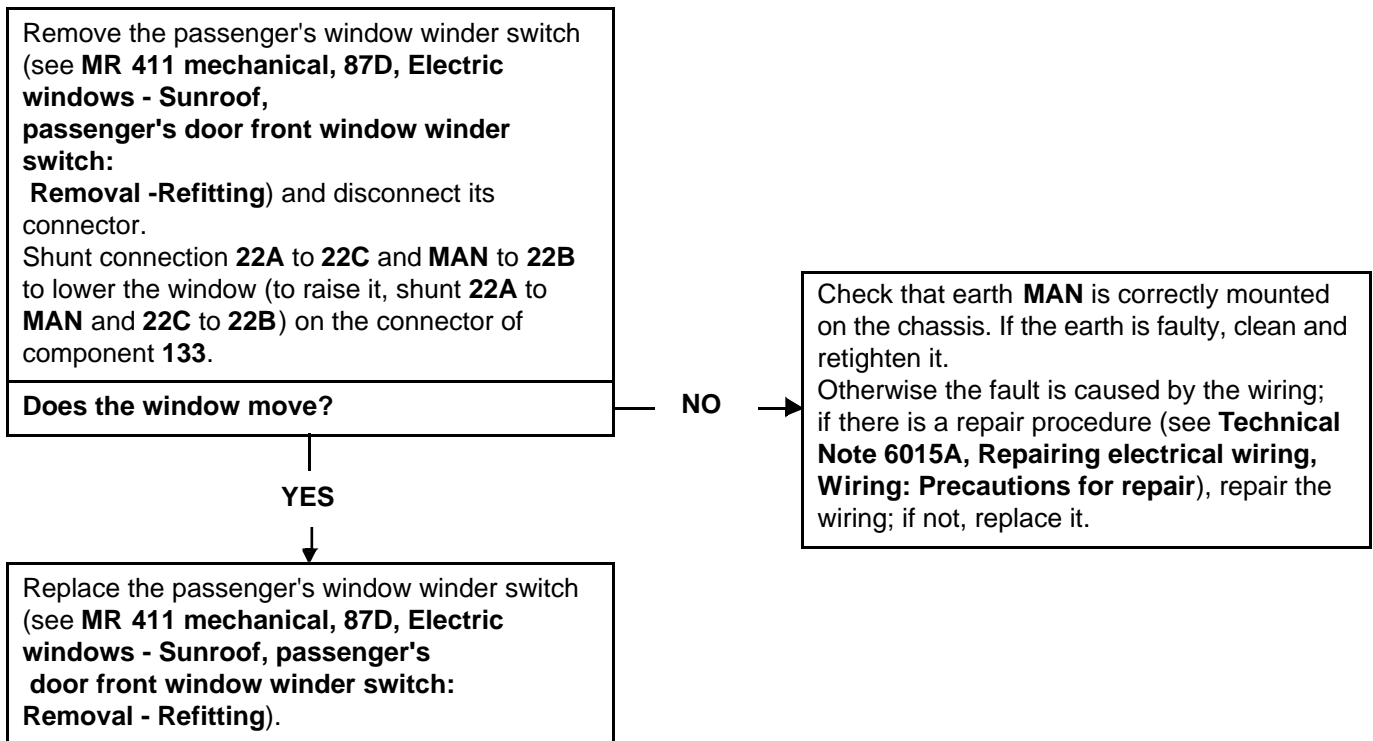
NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Use a 21 W test light.</p>
--------------	---



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

ALP 3	The passenger window does not operate at all with the passenger switch only
Applies to:	Driver and passenger electric windows Left-hand drive vehicle

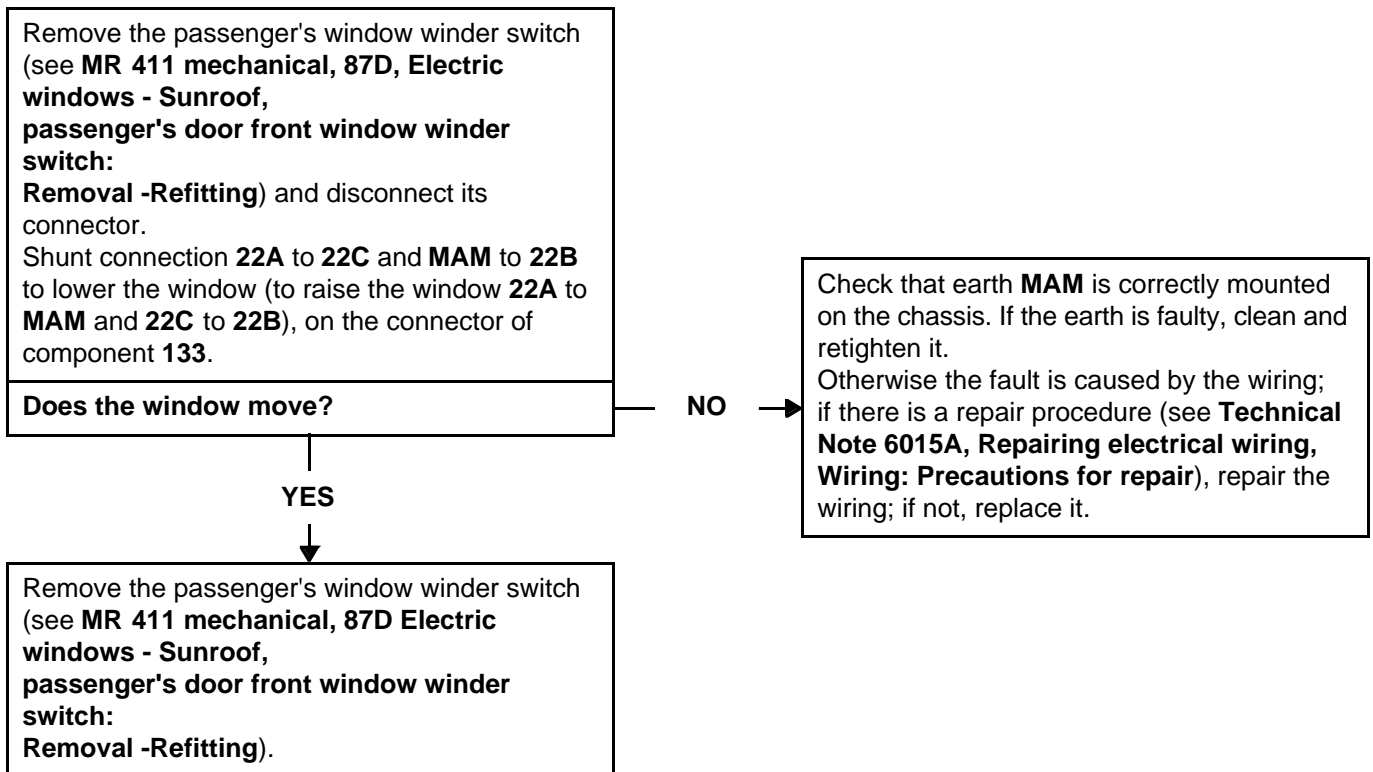
NOTES	Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on.
--------------	--



AFTER REPAIR	Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).
---------------------	--

ALP 3	The passenger window does not operate at all with the passenger switch only
Applies to:	Driver and passenger electric windows Right-hand drive vehicle

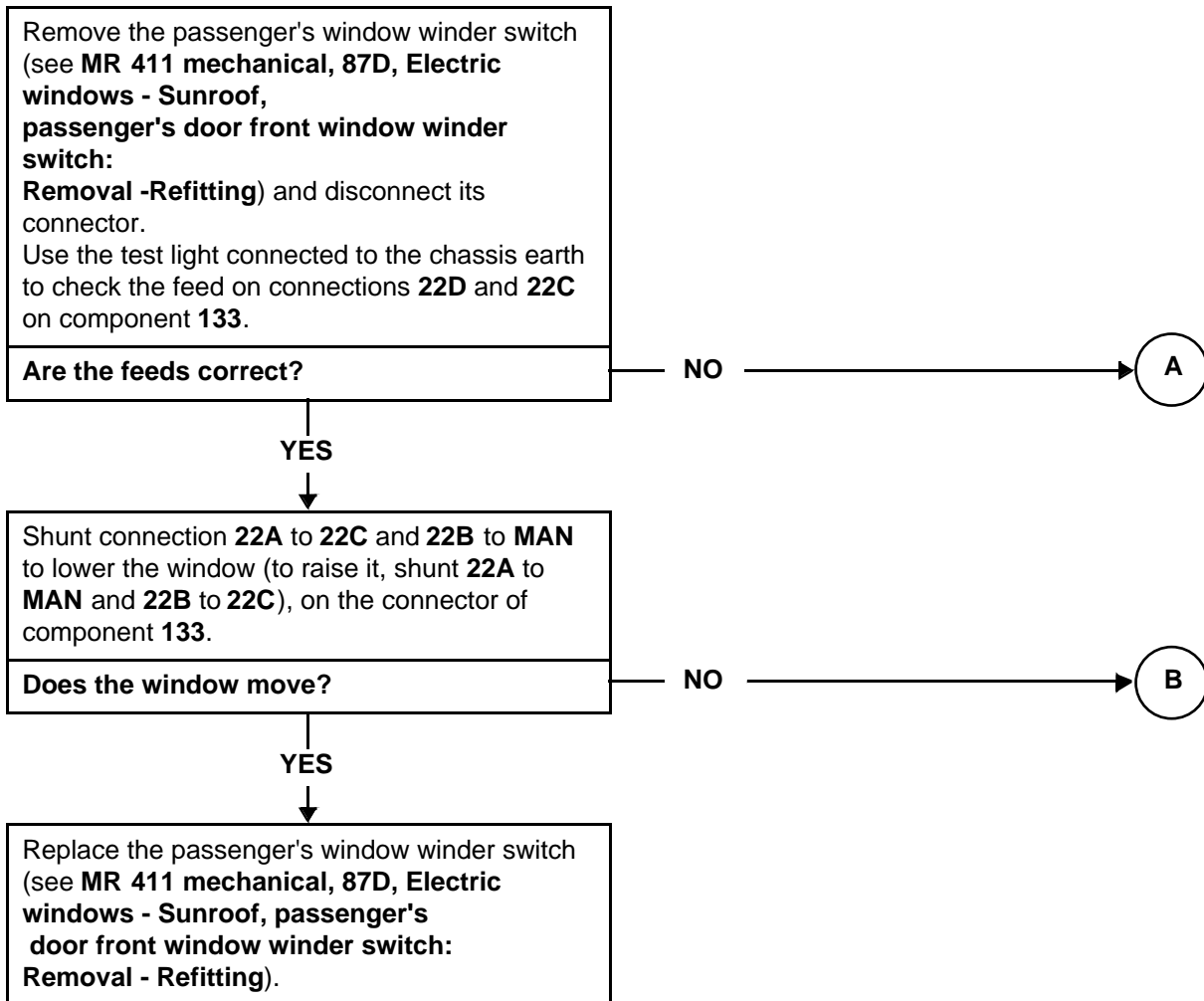
NOTES	Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on.
--------------	--



AFTER REPAIR	Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).
---------------------	--

ALP 4	The passenger window does not operate at all with any switch
Applies to:	Driver and passenger electric windows Left-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Use a 21 W test light.</p>
--------------	---



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

**ALP 4
CONTINUED**

A

Remove the driver's electric window switch (see **MR 411 mechanical, 87D Electric windows - Sunroof, driver's door front window winder switch: Removal - Refitting**).
 Shunt connection **SPB3** to **22D** and **22C** on connector of component **1512**.
 Using the test light connected to the chassis earth, check the feeds again on connections **22D** and **22C** on component **133**.

Are the feeds correct?

NO

Continuity fault on connection **22C** and **22D**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Replace the driver's window winder switch (see **MR 411 mechanical, 87D, Electric windows - Sunroof, Driver's door front window winder switch: Removal - Refitting**).

B

Connect a test light between connections **22B** and **22A** on component **204**.

Reconnect the electric window switch and operate it. Does the test light illuminate?

NO

Continuity fault on connection **22A** and **22B**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

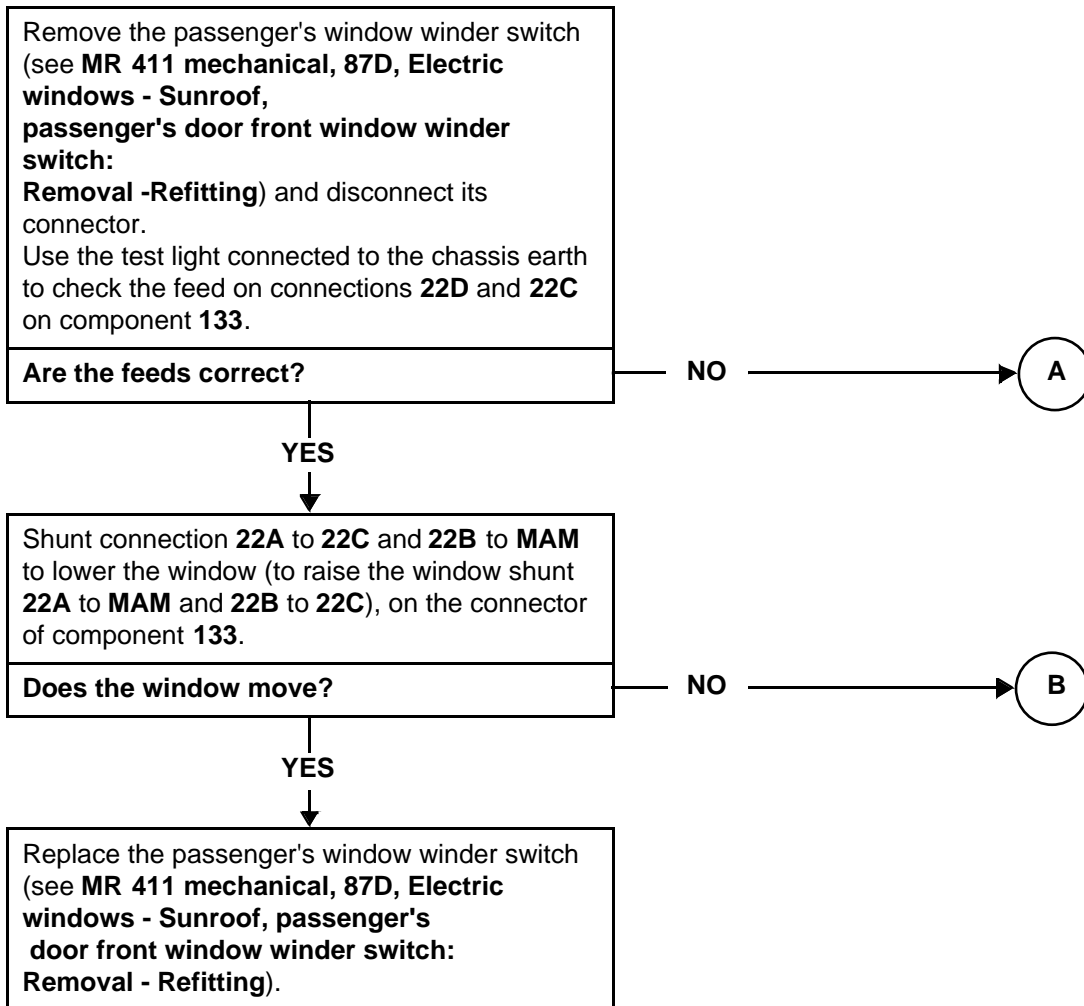
Replace the passenger's window winder motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).

ALP 4	The passenger window does not operate at all with any switch
Applies to:	Driver and passenger electric windows Right-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Use a 21 W test light.</p>
--------------	---



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

**ALP 4
CONTINUED**

A

Remove the driver's window winder switch (see **MR 411 mechanical, 87D Electric windows - Sunroof, driver's door front window winder switch: Removal - Refitting**).
 Shunt connection **SPB3** to **22D** and **22C** on connector of component **1512**.
 Using the test bulb connected to the chassis earth, check the feeds again on connections **22D** and **22C** on component **133**.

Are the feeds correct?

NO

Continuity fault on connection **22C** and **22D**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Replace the driver's window winder switch (see **MR 411 mechanical, 87D, Electric windows - Sunroof, Driver's door front window winder switch: Removal - Refitting**).

B

Connect a test light between connections **22B** and **22A** on component **204**.

Reconnect the electric window switch and operate it. Does the test light illuminate?

NO

Continuity fault on connection **22A** and **22B**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

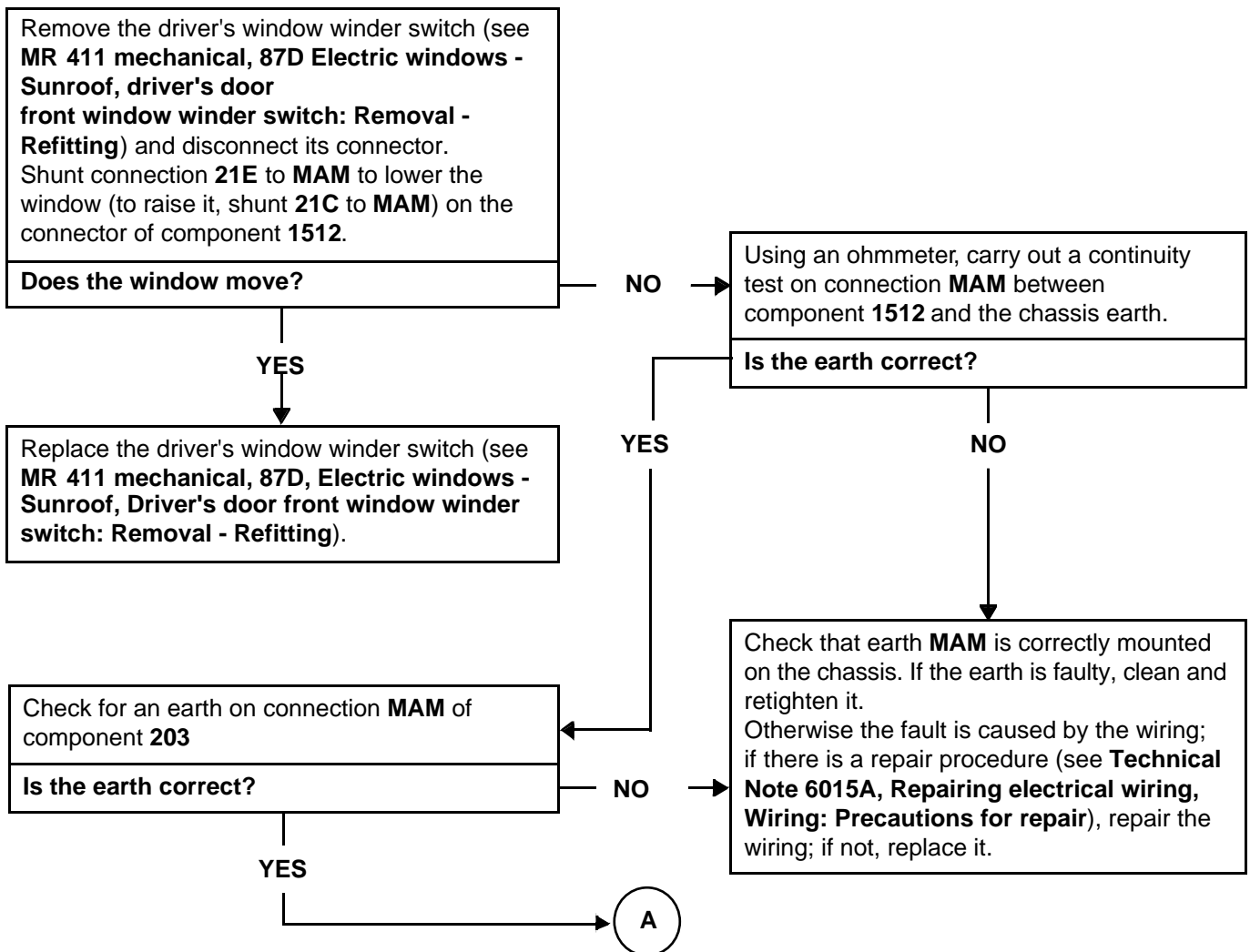
Replace the passenger's window winder motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).

ALP 5	Only the driver's window does not operate at all
Applies to:	Driver's one-touch electric windows and passenger's electric window Left-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged, + after ignition feed switched on and doors closed. Check that the fuses are sound. Using a 21 W test bulb and a multimeter.</p>
--------------	--



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

**ALP 5
CONTINUED 1**

A

Connect a test light between connection **MAM** and **BPT3** of component **203**.

Does the test light illuminate?

NO

Continuity fault on connection **BPT3**, pay close attention to the intermediate connectors. Check the continuity. Otherwise the fault is caused by the wiring; if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring; if not, replace it.

YES

Use a multimeter to check the presence of + 12 V on both connections **21E** and **21C** of component **1512**.

Is the feed approximately 12 V?

NO

B

YES

Check for + 12 V using a multimeter between connections **21K** and **BPT3** of component **203**.

Is the feed approximately 12 V?

NO

C

YES

Replace the window winder motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).

**ALP 5
CONTINUED 2**

B

Check the continuity on connections **21E** and **21C**, between components **1512** and **203**.

Is the continuity of the connections good?

NO

If there is a repair method (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair or replace the wiring.

YES

Replace the window winder motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

C

Use an ohmmeter to test the continuity on connection **21K** between components **203** and **645**.

Is the continuity correct?

NO

Continuity fault on connections **21K** between components **645** and **203**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

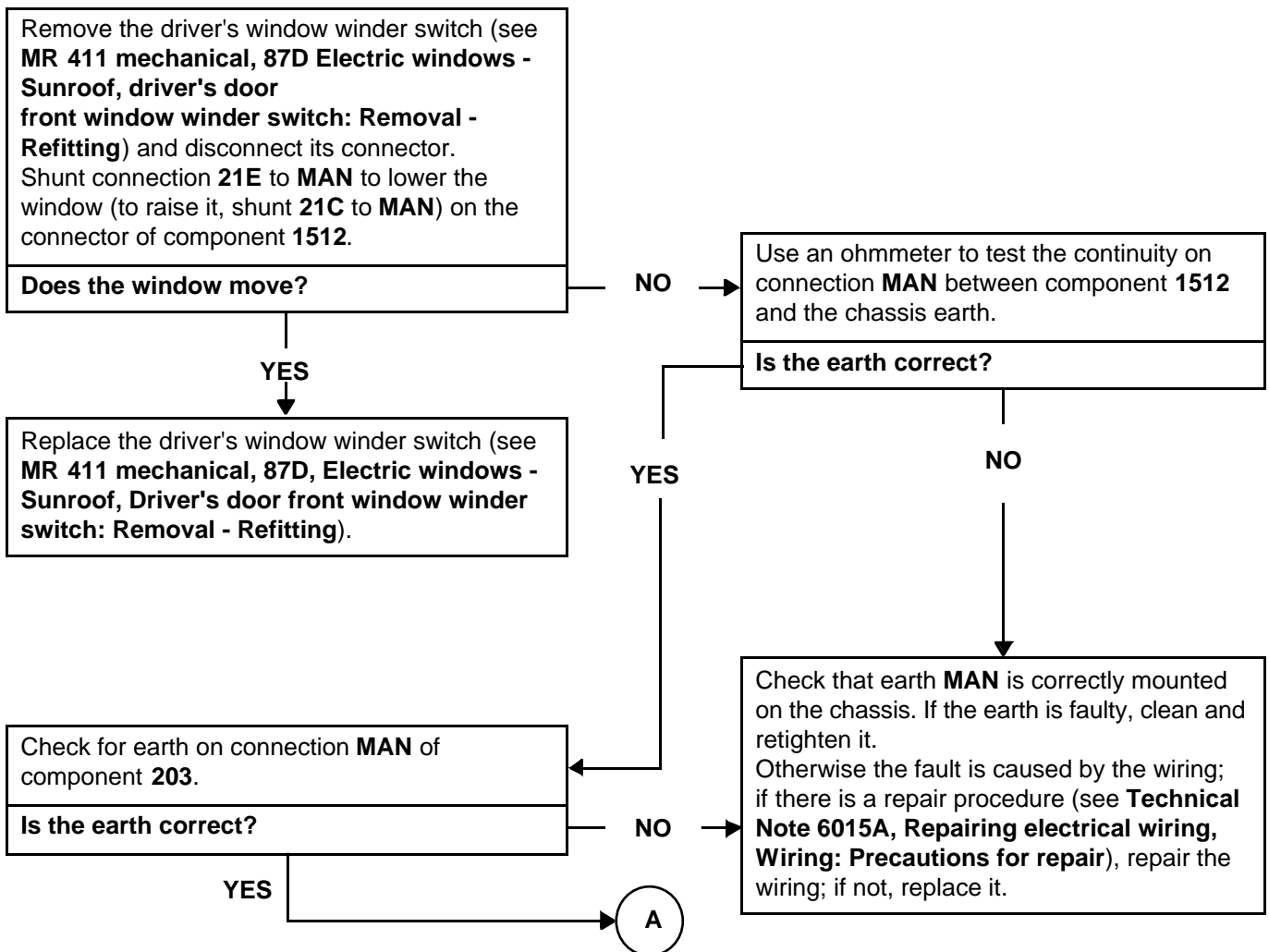
Use the diagnostic tool to check that status **ET087 "One touch window/sunroof authorisation"** displays **"ACTIVE"** and refer to the fault finding for status **ET087** (see **87B, passenger compartment connection unit, Interpretation of statuses**).

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see **Customer complaints**).

ALP 5	Only the driver's window does not operate at all
Applies to:	Driver's one-touch electric windows and passenger's electric window Right-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged, + after ignition feed switched on and doors closed. Check that the fuses are sound. Using a 21 W test bulb and a multimeter.</p>
--------------	--



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

**ALP 5
CONTINUED 1**

A

Connect a test light between connection **MAN** and **BPT3** of component **203**.

Does the test light illuminate?

NO

Continuity fault on connection **BPT3**, pay close attention to the intermediate connectors. Check the continuity. Otherwise the fault is caused by the wiring; if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring; if not, replace it.

YES

Use a multimeter to check the presence of + 12 V on both connections **21E** and **21C** of component **1512**.

Is the feed approximately 12 V?

NO

B

YES

Check for + 12 V using a multimeter between connections **21K** and **BPT3** of component **203**.

Is the feed approximately 12 V?

NO

C

YES

Replace the electric window motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).

**ALP 5
CONTINUED 2**

B

Check the continuity on connections **21E** and **21C**, between components **1512** and **203**.

Is the continuity of the connections good?

NO

If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Replace the window winder motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

C

Use an ohmmeter to test the continuity on connection **21K** between components **203** and **645**.

Is the continuity correct?

NO

Continuity fault on connection **21K** between components **645** and **203**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

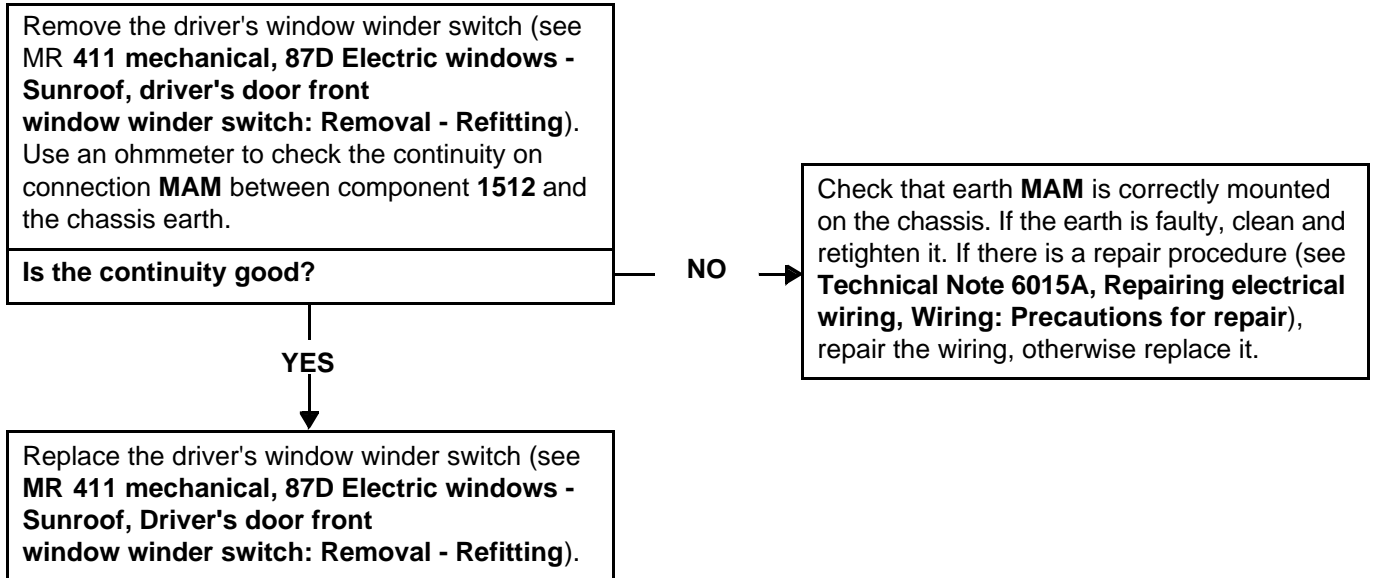
Use the diagnostic tool to check that status **ET087 "One touch window/sunroof authorisation"** displays **"ACTIVE"** and refer to fault finding on status **ET087** (see **87B, passenger compartment connection unit, Fault finding - Interpretation of statuses**).

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see **Customer complaints**).

ALP 6	Driver's and passenger's windows do not operate at all with the driver's switch only
Applies to:	Driver's one-touch electric windows and passenger's electric window Left-hand drive vehicle

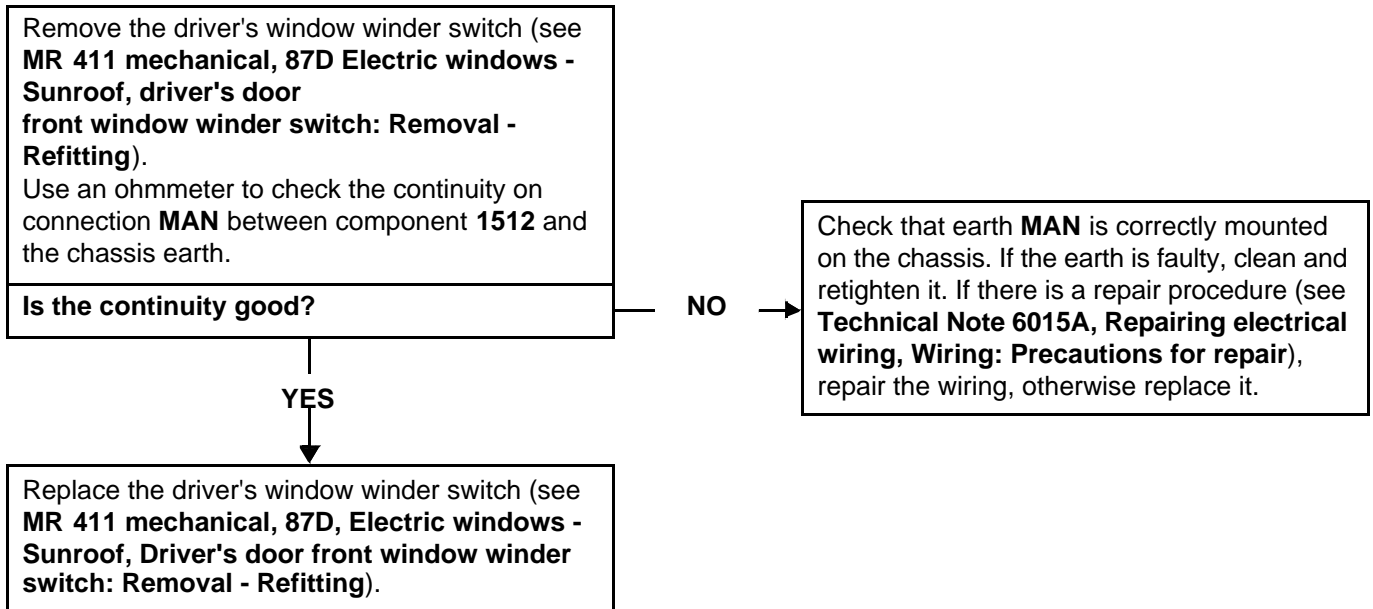
NOTES	<p>Use Technical Note Wiring Diagram, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Use a multimeter.</p>
--------------	--



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

ALP 6	Driver's and passenger's windows do not operate at all with the driver's switch only
Applies to:	Driver's one-touch electric windows and passenger's electric window Right-hand drive vehicle

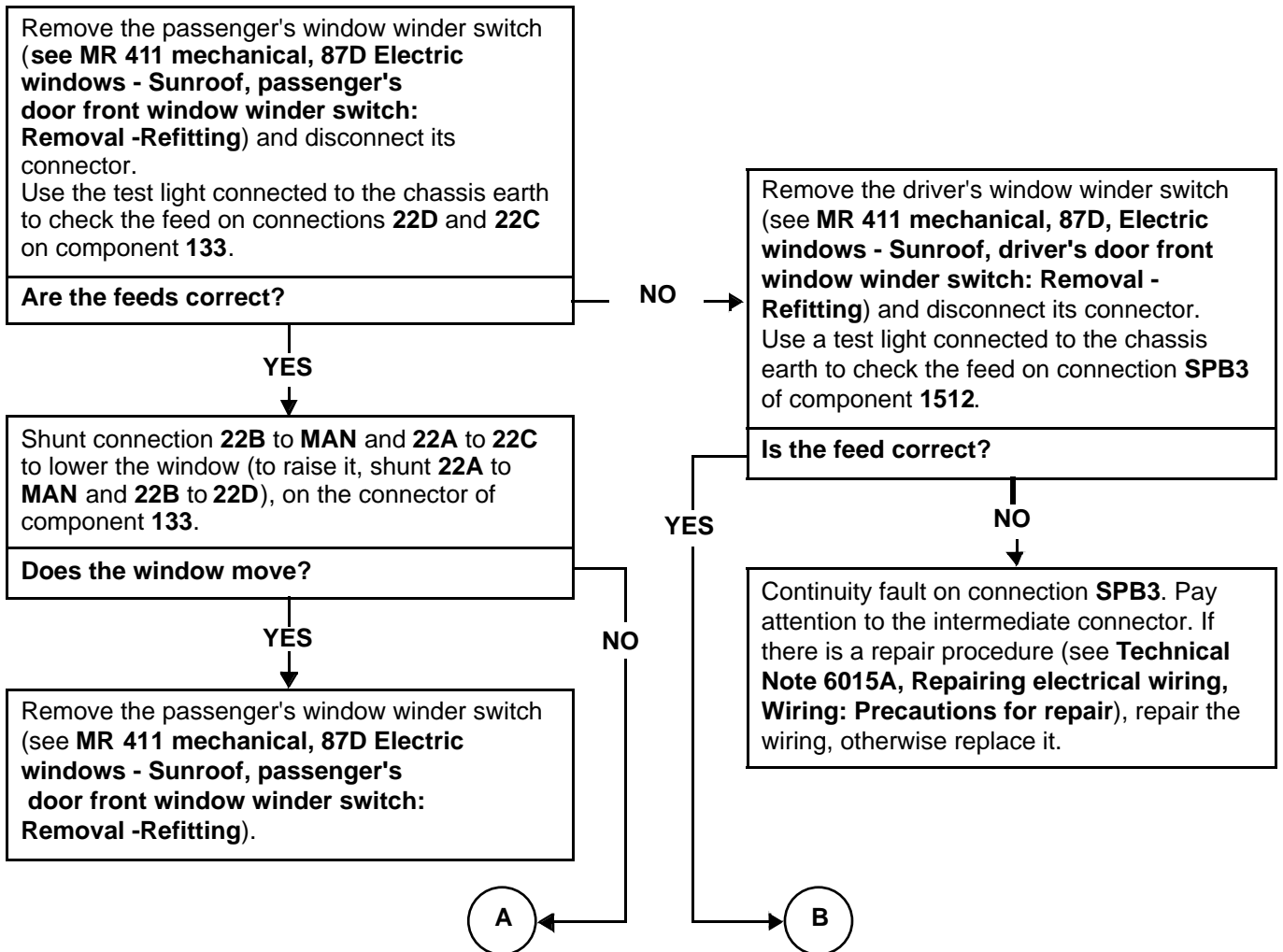
NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Use a multimeter.</p>
--------------	--



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

ALP 7	The passenger window does not operate at all with any switch
Applies to:	Driver's one-touch electric windows and passenger's electric window Left-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Check that the fuses are sound. Use a 21 W test light.</p>
--------------	--



AFTER REPAIR	Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).
---------------------	--

**ALP 7
CONTINUED**

A

Connect a test light between connections **22B** and **22A** of component **204**.

Reconnect the electric window switch and operate it. Does the test light illuminate?

NO

Continuity fault on connection **22A** and **22B**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Replace the window winder motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

B

Shunt connection **SPB3** to **22D** and **22C** on component connector **1512**.
Using the test bulb connected to the chassis earth, check the feeds again on connections **22D** and **22C** on component **133**.

Are the feeds correct?

NO

Continuity fault on connections **22D** and **22C**. Pay close attention to the intermediate connector. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

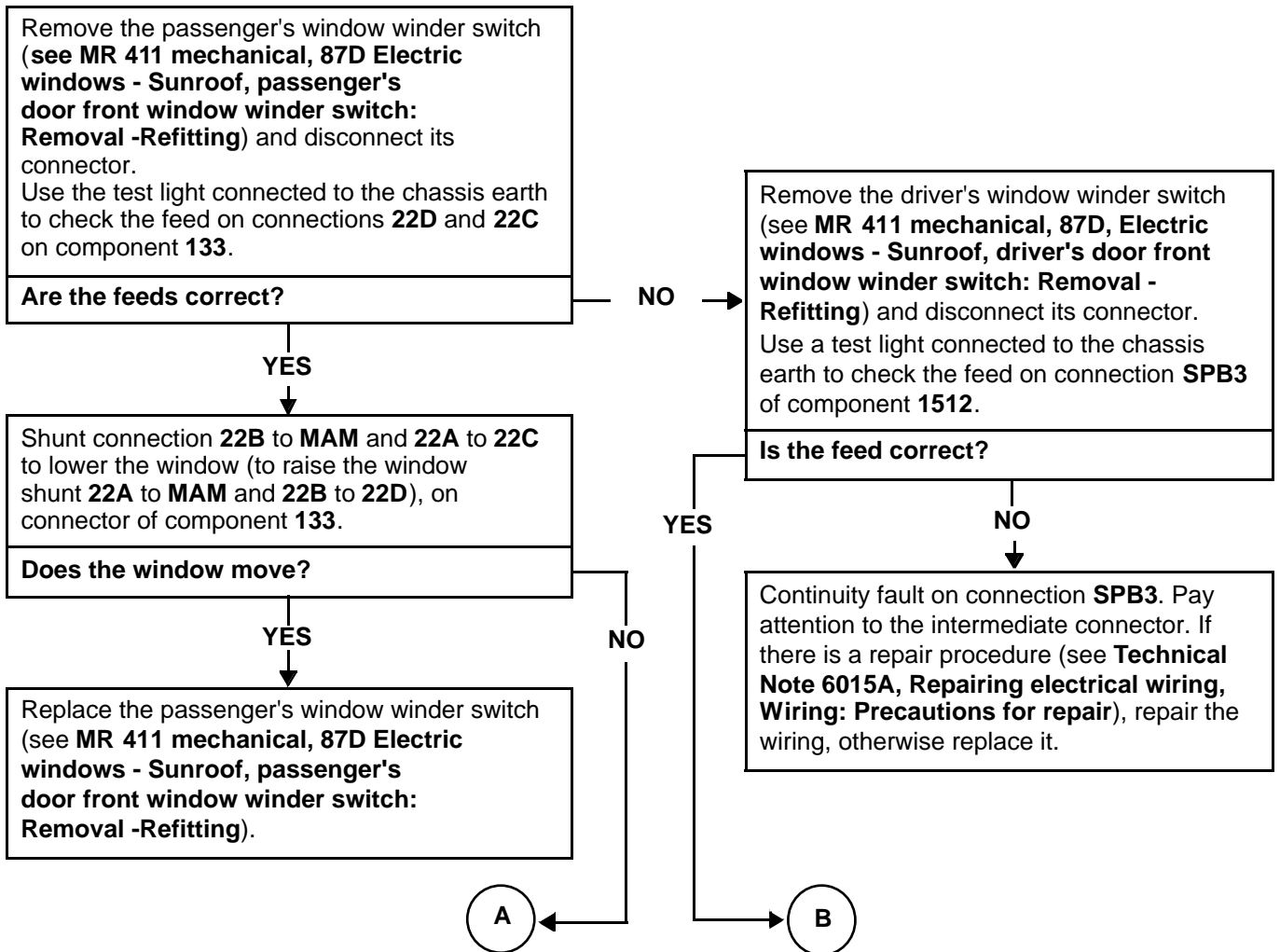
Replace the driver's window winder switch (see **MR 411 mechanical, 87D, Electric windows - Sunroof, Driver's door front window winder switch: Removal - Refitting**).

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).

ALP 7	The passenger window does not operate at all with any switch
Applies to:	Driver's one-touch electric windows and passenger's electric window Right-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Check that the fuses are sound. Use a 21 W test light.</p>
--------------	--



AFTER REPAIR	Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).
---------------------	--

**ALP 7
CONTINUED**

A

Connect a test bulb between connection **22B** and connection **22A** on component **204**.

Reconnect the electric window switch and operate it. Does the test light illuminate?

NO

Continuity fault on connection **22A** and **22B**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Replace the window winder motor (see **MR 412 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

B

Shunt connection **SPB3** to **22D** and **22C** on component connector **1512**.
 Use a test light connected to the chassis earth to check the feeds again on connections **22D** and **22C** on component **133**.

Are the feeds correct?

NO

Continuity fault on connections **22D** and **22C**. Pay close attention to the intermediate connector. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

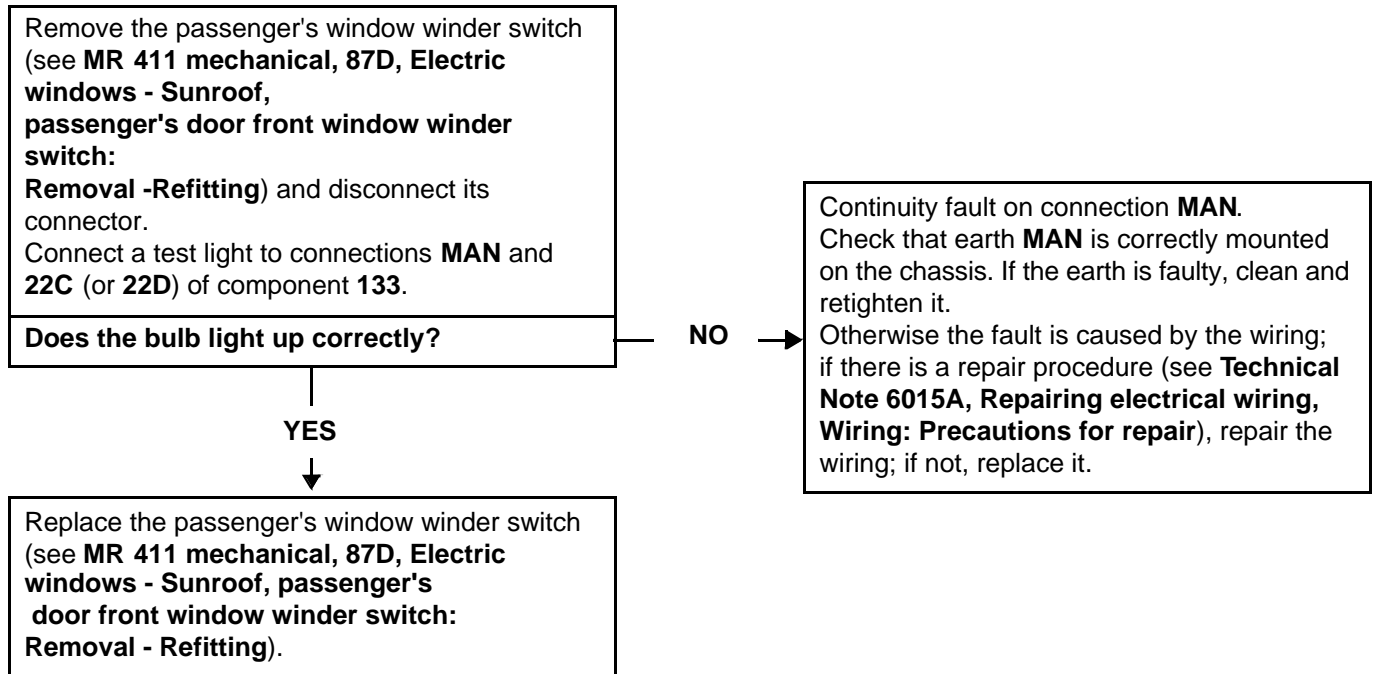
Replace the driver's window winder switch (see **MR 411 mechanical, 87D, Electric windows - Sunroof, Driver's door front window winder switch: Removal - Refitting**).

AFTER REPAIR

Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).

ALP 8	The passenger window does not operate at all with the passenger switch only
Applies to:	Driver's one-touch electric windows and passenger's electric window Left-hand drive vehicle

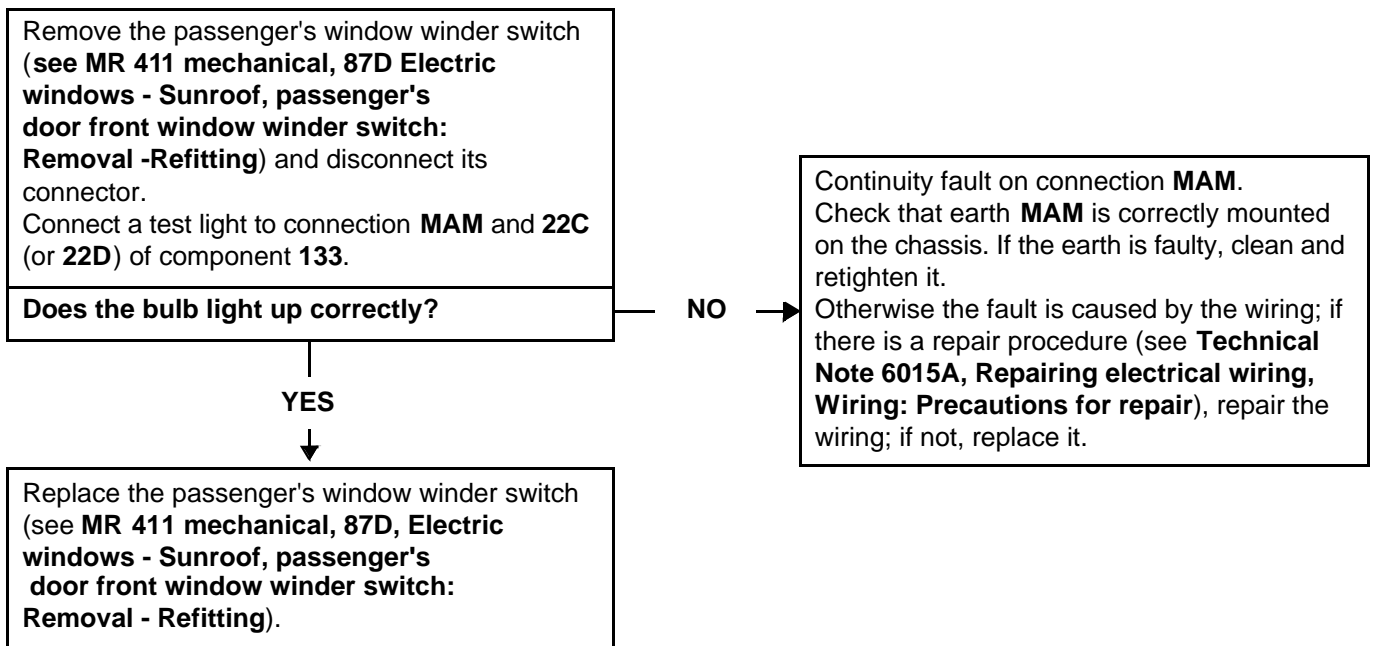
NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Use a 21 W test light.</p>
--------------	---



AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

ALP 8	The passenger window does not operate at all with the passenger switch only
Applies to:	Driver's one-touch electric windows and passenger's electric window Right-hand drive vehicle

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Use a 21 W test light.</p>
--------------	---



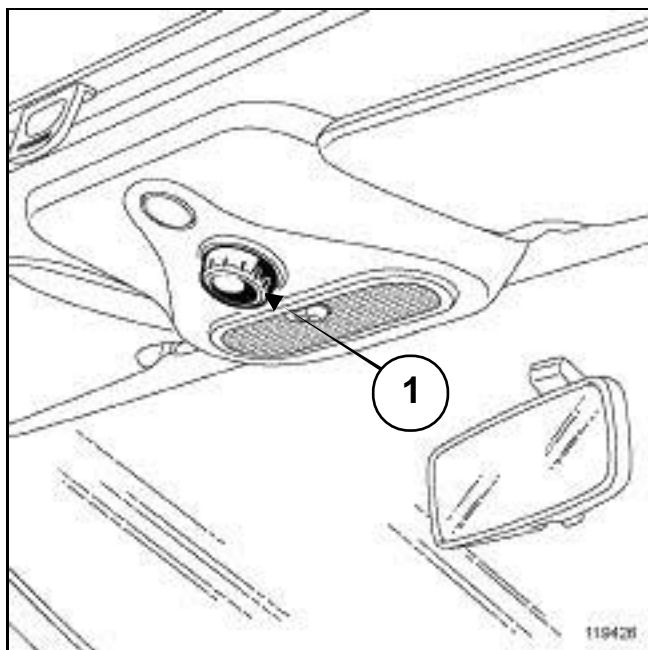
AFTER REPAIR	<p>Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).</p>
---------------------	---

ALP 9	Driver's window rises jerkily in 50 mm stages
Applies to:	Driver's one-touch electric windows and passenger's electric window Left-hand drive and right-hand drive vehicles

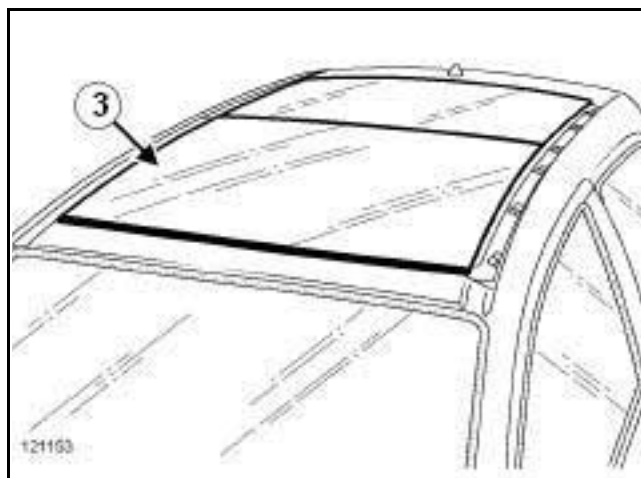
NOTES	The battery must be charged and + after ignition feed switched on.
--------------	--

The fault is due to a loss of initialisation.
To cure the fault (see **Electric sunroof: Initialisation**).

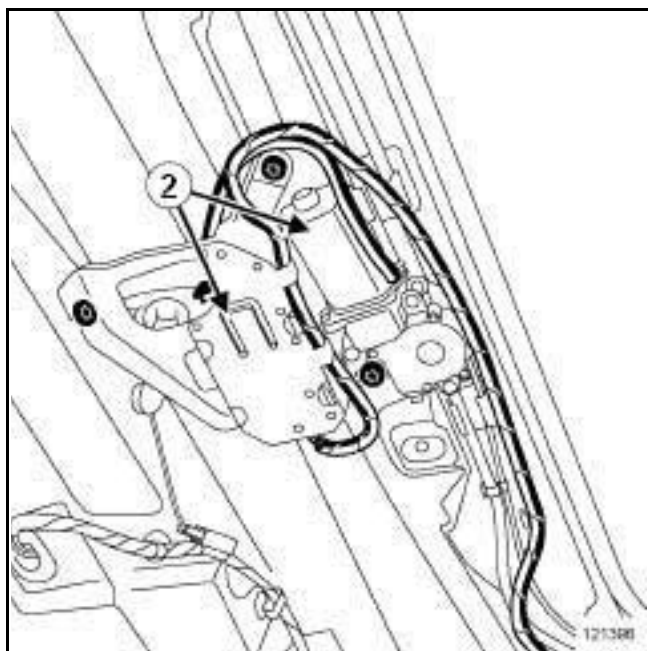
AFTER REPAIR	Check that the electric windows are operating correctly; if not, run fault finding (see Customer complaints).
---------------------	--



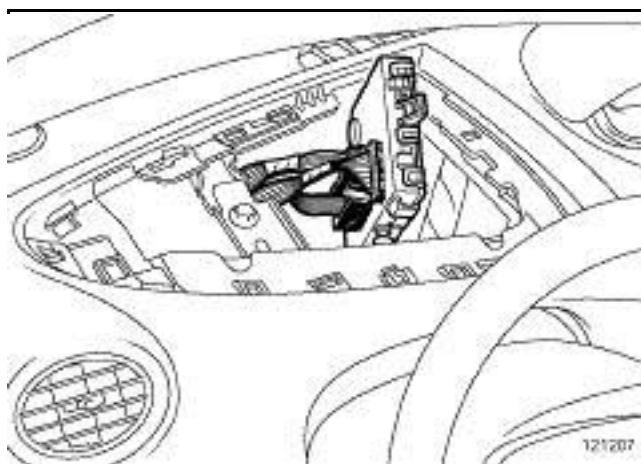
1 Sunroof opening and closing control



3 Electric sunroof mobile panel

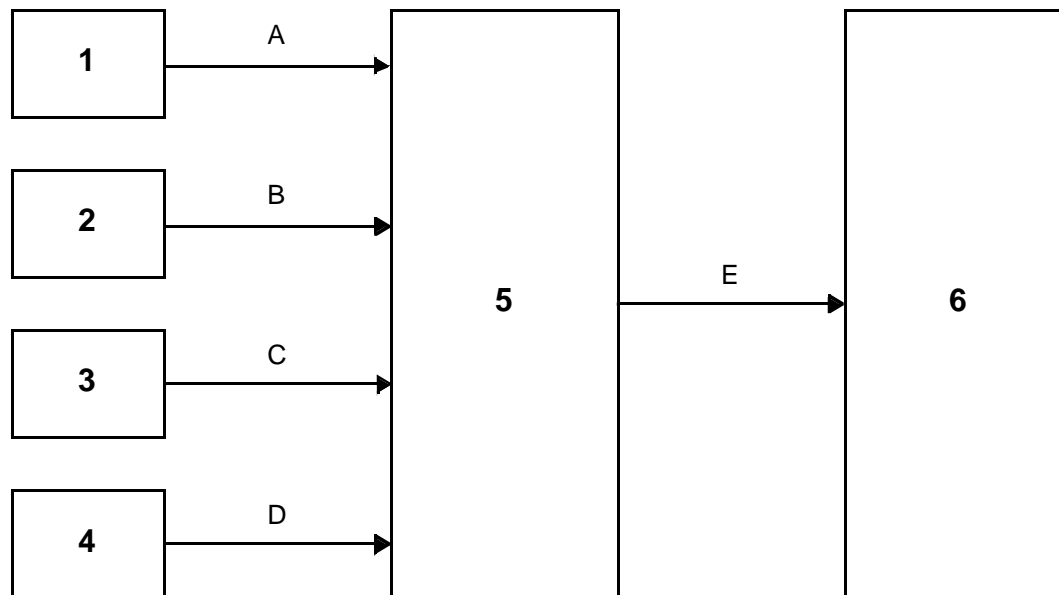


2 Electric sunroof motor



4 UCH

- The electric sunroof allows additional air to circulate in the vehicle and lets in more light.
- The electric sunroof switch allows the customer to select any one of four open positions. One tilted position and three sliding positions.
- The UCH controls the operation of the sunroof.
- The sunroof computer receives the sunroof opening or closing request from the control as well as information on the vehicle's speed and authorises the sunroof to operate.
- The motor (controlled by the computer) drives a mechanism to make the glass roof slide.

ELECTRIC SUNROOF

- 1 - Relay/fuse box
- 2 - UCH
- 3 - ABS computer
- 4 - Sunroof opening and closing control
- 5 - Sunroof computer
- 6 - Sunroof electric motor

- A - Sunroof computer supply
- B - Authorisation to operate
- C - Vehicle speed
- D - Opening or closing request
- E - Sunroof motor electric control

The electric sunroof has four open positions (one tilted position and three sliding positions) controlled by the same motor. The electric sunroof also has an anti-pinch function.

To operate, the sunroof motor requires a feed which is supplied by its computer. The computer receives signals from the switch and the authorisation from the UCH (**0 V authorisation and 12 V no authorisation**). The computer also receives information about the motor's speed of rotation and direction of rotation.

Anti-pinch function:

Anti-pinch is a safety function that stops the roof closing when it detects a point of resistance (damaged rail, hand present, etc.)

The detection of an obstacle is based on an analysis of the sunroof motor's speed of rotation.

During the initialisation phase, the motor computer stores the speed curve.

The computer compares the sunroof's speed of movement (motor's speed of rotation) with the stored speed of movement.

The computer also receives information about the vehicle speed, so that at high speed the wind pressure working against the closing movement of the roof is taken into account.

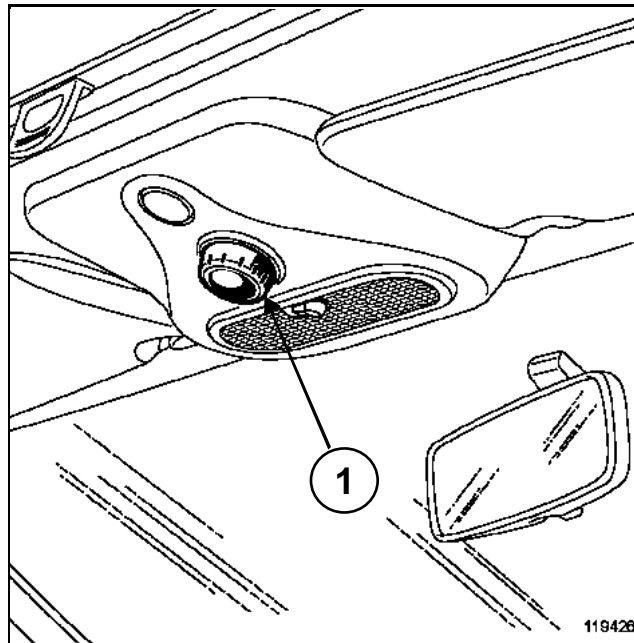
Depending on the speed variation detected, the system decides whether or not to trigger the anti-pinch function.

WARNING

The anti-pinch function only operates if the sunroof has been correctly initialised (see **Initialisation**).

INHIBITING THE ANTI-PINCH FUNCTION

The roof mechanism may be subject to various problems (jammed by ice, snow etc. or mechanical damage due to an accident), therefore, the anti-pinch system must be easy to disable. The electric roof anti-pinch function can be disabled to overcome a point of resistance (damaged rail, foreign body in the runners).

Mode:

- Index of the switch in the closed position with anti-pinch detection. Hold the centre of the control (1) down until the anti-pinch function has been triggered.
- The roof closes in single-step mode (or smoothly) in 5 cm stages in the sliding position and in 1 cm stages in the tilt position until the centre of the control (1) is released.
- When the control is released, the anti-pinch function is reactivated.

Note:

If the operation is not carried out immediately after the anti-pinch is triggered, it will not be disabled.

- If the sunroof is faulty, it is possible to move the sunroof manually using a flat-blade screwdriver.

After any work has been carried out on the sunroof, or if there is a fault with the anti-pinch feature on the sunroof, initialise the sunroof motor.

- 1) Read through the procedure in full before starting.
- 2) Switch on the + after ignition feed.
- 3) Move the sunroof control into the tilt position (control turned fully to the left).
- 4) Press and hold the central area of the control: the sunroof will move into the full tilt position without anti-pinch.
- 5) After hearing two clicking sounds (motor switching), press and hold the button for approximately **1 second**, release it and then press and hold it again until the roof opens and closes completely. It is normal for the sunroof not to open immediately (delay of approximately **3 seconds**).
- 6) Release the button.

The sunroof is operational again. The motor is initialised.

IMPORTANT

- If the procedure is interrupted during the cycle, start again from the beginning otherwise the sunroof will no longer work.
- If there is too long a delay before the button is pressed for the second time during the procedure, start the procedure again from the beginning.

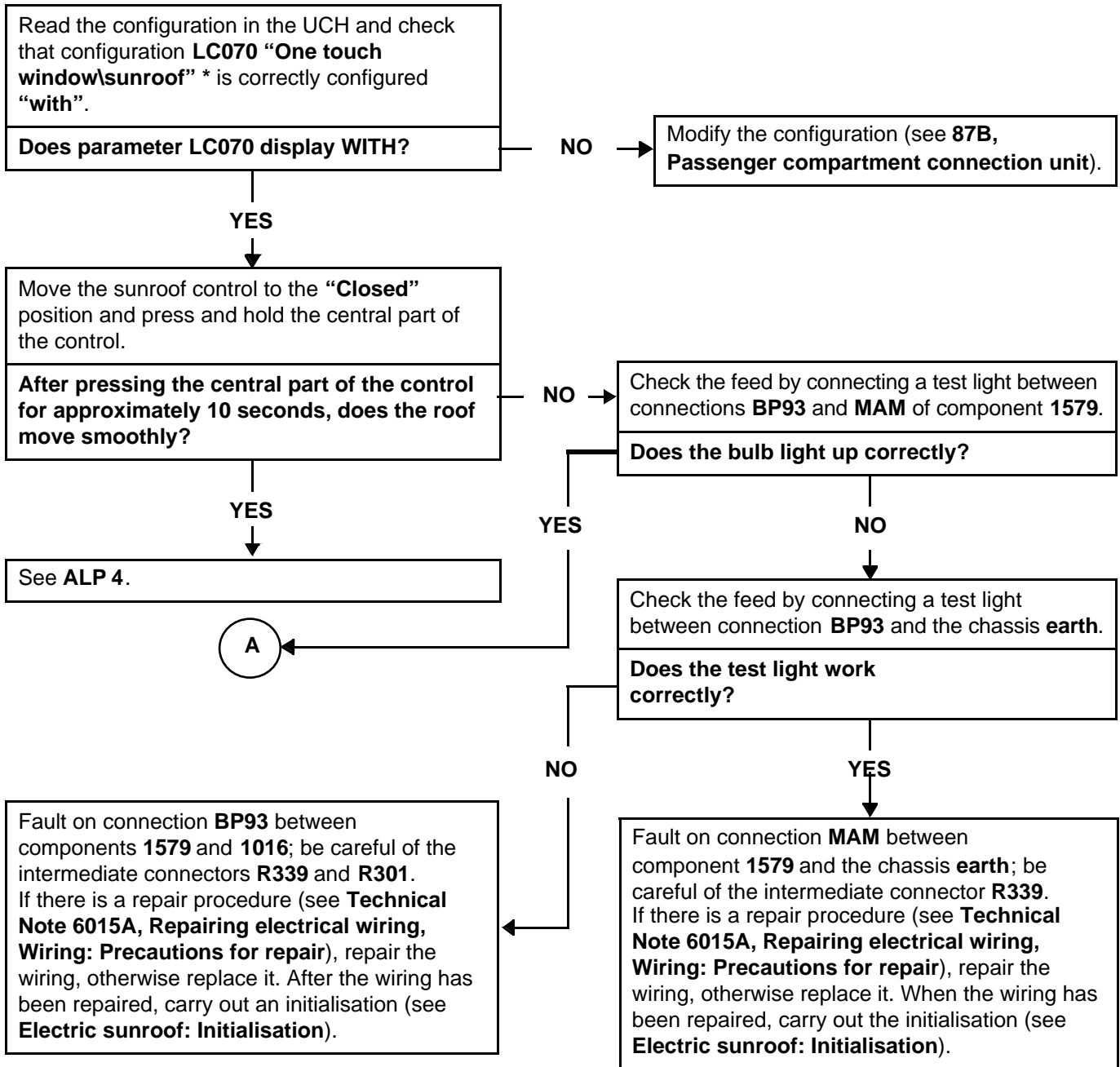
NOTES	Only refer to these customer complaints after performing a complete check with the diagnostic tool .
--------------	--

THE SUNROOF

- THE SUNROOF DOES NOT WORK ATALL ALP 1
- THE SUNROOF DOES NOT WORK IN CERTAIN POSITIONS ON THE CONTROL ALP 2
- THE SUNROOF DOES NOT CLOSE WHEN DRIVING (ANTI-PINCH IS TRIGGERED) ALP 3
- THE SUNROOF IS DIFFICULT TO CLOSE OR THE ANTI-PINCH IS TRIGGERED WITHOUT ANY APPARENT OBSTACLE ALP 4

ALP 1	The sunroof does not operate at all
--------------	--

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Check that the fuses are sound. Use a multimeter and a 21 W test bulb. Use the diagnostic tool.</p>
--------------	--



**ALP 1
CONTINUED 1**

A

Use the diagnostic tool to read status **ET087** "one touch window/sunroof authorisation".

Is the STATUS ACTIVE?

NO

Check the UCH, by consulting the interpretation of status **ET087** (see **87B, passenger compartment connection unit, Interpretation of parameters**).

YES

Check for + 12 V by connecting a multimeter between connections **21K** and **BP93** of component **1579**.

Is there + 12 V?

YES

B

NO

Check the continuity of connection **21K** between components **645** and **1579**; be careful of the intermediate connectors **R339** and **R301**.

Is the continuity correct?

NO

Continuity fault on connection **21K** between components **645** and **1579**; be careful of the intermediate connectors **R339** and **R301**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. When the wiring has been repaired, carry out the initialisation (see **Electric sunroof: Initialisation**).

YES

Check the insulation to + 12 V on connection **21K** of component **1579**; be careful of the intermediate connectors **R339** and **R301**.

Is the insulation to + 12 V OK?

NO

Line **21K** has a short circuit to + 12 between components **645** and **1579**; be careful of the intermediate connectors **R339** and **R301**. If there is a repair method (See **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. When the wiring has been repaired, carry out the initialisation (see **Electric sunroof: Initialisation**).

YES

Connection **21K** is correct, run fault finding on the UCH (see **87B, Passenger compartment connection unit**).

ALP 1
CONTINUED 2

B

Disconnect the computer connector and the sunroof switch (components 1579 and 317). Check the continuity and insulation of connection **52D** between components **317** and **1579**.

Is the continuity correct?

NO

Continuity fault on connection **52D** between component **317** and **1579**. If there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

Use an ohmmeter and the table below to check the conformity and correct operation of the sunroof control (component 317).

Control position	Connect the ohmmeter between connections 52D and		
	52G	52H	52J
Tilt position	infinite	100 Ω Maximum	100 Ω Maximum
Closed	infinite	infinite	100 Ω Maximum
Sliding position 1	100 Ω Maximum	infinite	100 Ω Maximum
Sliding position 2	100 Ω Maximum	infinite	infinite
Sliding position 3	100 Ω Maximum	100 Ω Maximum	infinite
Pressed	100 Ω Maximum	100 Ω Maximum	100 Ω Maximum

C

ALP 1
CONTINUED 3

C

Is the control correct?

NO

Replace the control (see **MR 411, mechanical systems, 87D, Electric windows - sunroof, sunroof switch: Removal - Refitting**).

YES

Check the continuity and insulation of the following connections:
 – **52G** between component **317** and **1579**,
 – **52H** between component **317** and **1579**,
 – **52J** between component **317** and **1579**.

Are the connections correct?

NO

Fault on connections **52G**, **52H** and/or **52J** if there is a repair procedure (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.

YES

D

ALP 1
CONTINUED 4

D

Move the sunroof control button into the tilt position and press and hold the centre of the control.

Can the relay clicking noise in the computer be heard?

NO

Replace the sunroof computer (see **MR 411 mechanical, 87D, Electric windows - sunroof, Electric sunroof computer: Removal - Refitting**).

YES

Connect a multimeter into the voltmeter position between connections **52AA** and **52AB** of component **1579** (directly on the connector).

Is there a voltage of 12 V?

NO

Replace the sunroof computer (see **MR 411 mechanical, 87D, Electric windows - sunroof, Electric sunroof computer: Removal - Refitting**).

YES

Connect a multimeter to the voltmeter position between connections **52Y** and **52Z** of component **1578**, and vary the position of the sunroof switch button between opening positions 1, 2 or 3.

Is there a voltage of 12 V?

NO

Replace the sunroof computer (see **MR 411 mechanical, 87D, Electric windows - sunroof, Electric sunroof computer: Removal - Refitting**).

YES

Replace the sunroof motor (see **MR 411 mechanical, 87D, Electric windows - sunroof, Electric sunroof motor: Removal - Refitting**).

ALP 2	The sunroof does not operate in certain positions on the control
--------------	---

NOTES	<p>Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on. Carry out the various checks with a multimeter.</p>
--------------	--

Does the sunroof operate in at least one of the control positions? NO → See ALP 1.

YES

Disconnect the sunroof switch connector (component 317). Use an ohmmeter and the table below to check the conformity and correct operation of the sunroof control.

Control position	Connect the ohmmeter between connections 52D and		
	52G	52H	52J
Tilt position	infinite	100 Ω Maximum	100 Ω Maximum
Closed	infinite	infinite	100 Ω Maximum
Sliding position 1	100 Ω Maximum	infinite	100 Ω Maximum
Sliding position 2	100 Ω Maximum	infinite	infinite
Sliding position 3	100 Ω Maximum	100 Ω Maximum	infinite
Pressed	100 Ω Maximum	100 Ω Maximum	100 Ω Maximum

↓

A

**ALP 2
CONTINUED**

A

Is the control correct?

NO

Replace the control (see **MR 411 Mechanical, 87D Electric windows - Sunroof, Sunroof switch: Removal - Refitting**).

YES

Disconnect the computer connector and the sunroof switch (components 1579 and 317) and use a multimeter to check the continuity and insulation of connections **52J, 52H, 52G** between components **317** and **1579**.

Are the continuity and insulation both correct?

NO

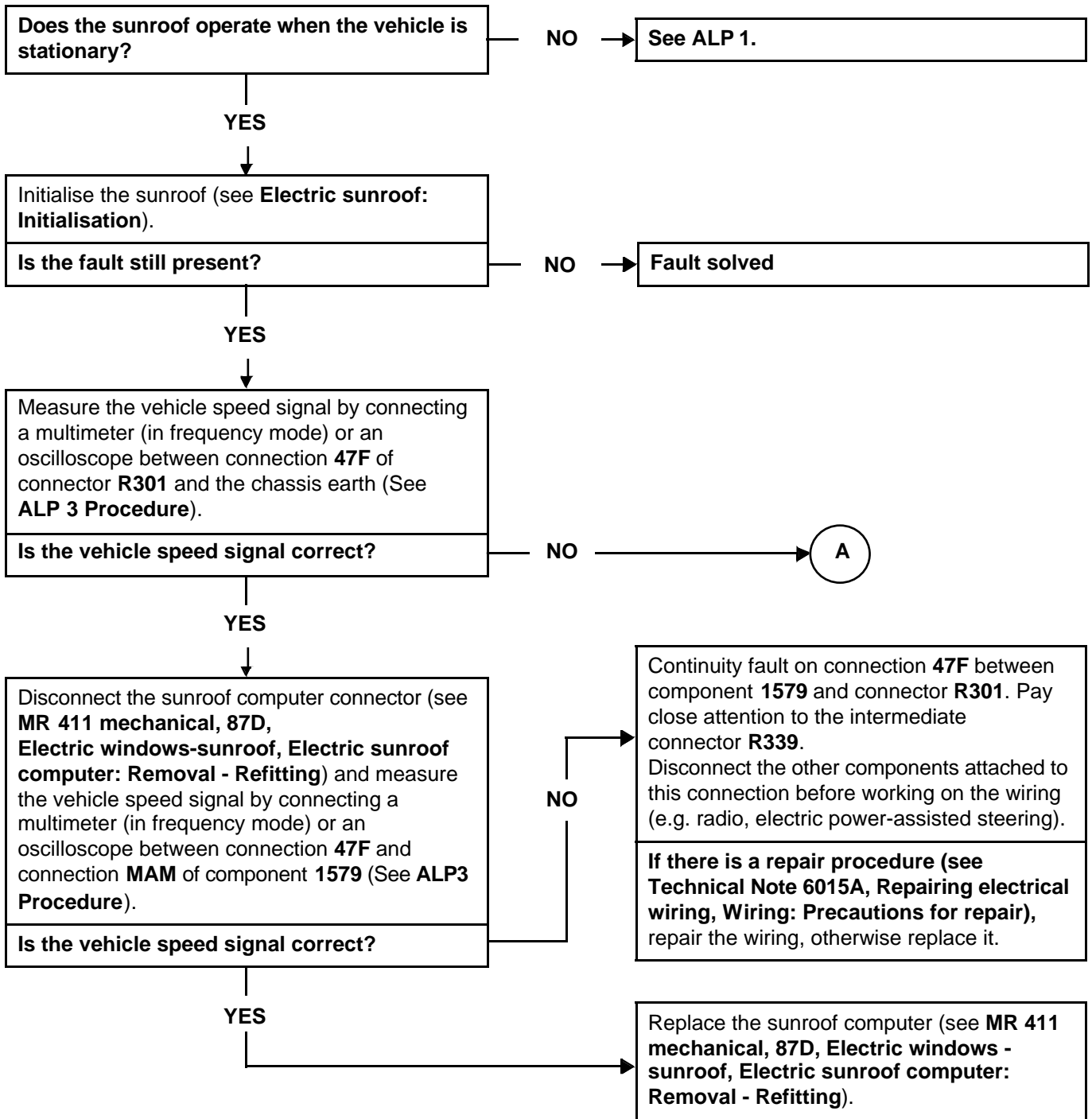
If there is a repair method (See **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it. When the wiring has been repaired, carry out the initialisation (see **Electric sunroof: Initialisation**).

YES

Replace the sunroof computer (see **MR 411 mechanical, 87D, Electric windows - sunroof, Electric sunroof computer: Removal - Refitting**).

ALP 3	The sunroof does not close when driving (anti-pinch is triggered)
--------------	--

NOTES	Use Wiring Diagram Technical Note, New Twingo. Carry out the various checks with the battery charged and + after ignition feed switched on.
--------------	--



ALP 3
CONTINUED

A

Check the insulation and continuity of connection **47F** between components **1094** and **1579**; be careful of the intermediate connectors **R339** and **R301**.

Is the connection OK?

Carry out fault finding on the ABS (see **38 C**, **Anti-lock braking system, Introduction**).

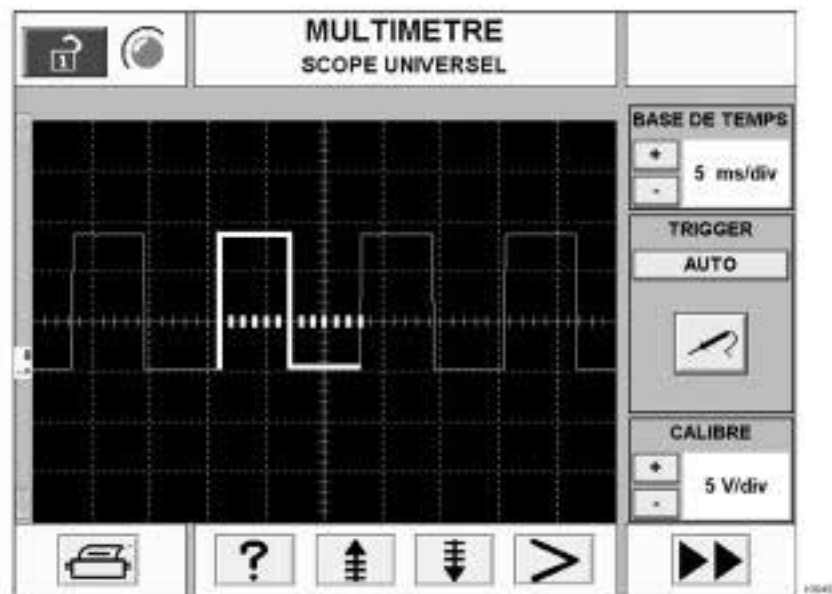
If there is a repair method (See **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**), repair the wiring, otherwise replace it.
After the wiring has been repaired, carry out an initialisation (see **Electric sunroof: Initialisation**).
Disconnect the other components attached to this connection before working on the wiring (e.g.: radio, electronic power-assisted steering).

ALP 3	Procedure
--------------	------------------

NOTES	Use Wiring Diagram Technical Note, New Twingo. Check that the sunroof works properly when the vehicle is stationary. Use the diagnostic tool and/or a multimeter.
--------------	---

IMPORTANT

In order for the ABS computer to send a signal to connection 47F, run command **AC195** using the CLIP tool. This command generates a speed signal on the wire connection (**approx. 100 Hz**) addressed to all the electrical consumers of this information (radio, roof, etc.). This command (AC195) has no visible effect on the instrument panel speedometer. For vehicles without ABS, carry out a road test.

**When using the oscilloscope (CLIP)**

1 - Set the oscilloscope with a time base of 5 ms/div and a calibration of 5 V/div (as shown in the illustration).

2 - Convert the signal into time in seconds.

Example: $T = 12 \text{ ms} = 0.012 \text{ s}$.

3 - Convert this time into frequency.

E.g. $F: 1/T = 1/0.012 = 83.333\text{Hz}$

Oscilloscope or multimeter in frequency meter mode

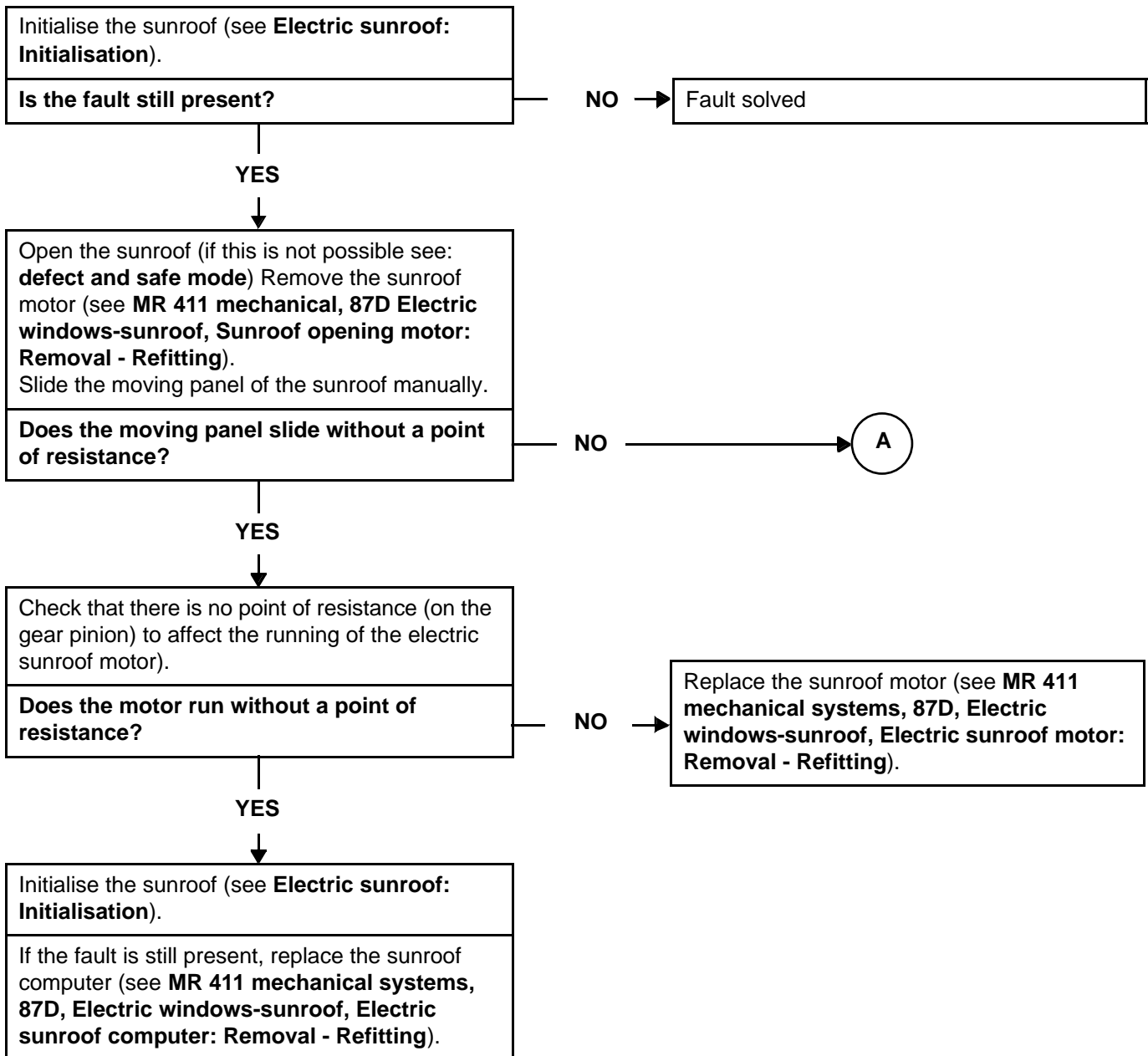
To convert frequency to km/h, multiply the frequency by 18 and divide by 25.

E.g.: $83.333 \text{ (Hz)} \times 18/25 = 60 \text{ (km/h)}$

The frequency of the measured signal gives the approximate speed on the instrument panel.

ALP 4	The sunroof is difficult to close or the anti-pinch is triggered without any apparent obstacles
--------------	--

NOTES	Carry out the various checks with the battery charged and + after ignition feed switched on.
--------------	--



**ALP 4
CONTINUED**

A

Remove the sunroof mobile panel (see **MR 412 Bodywork, 52A, Non-side opening element mechanisms, Sunroof mobile panel: Removal - Refitting**). Visually check that no foreign bodies (sand, leaves, etc.) are present in the rails.

Are any foreign bodies present?

YES →

Clean the mechanism and the rails. Refit the sunroof mobile panel (see **MR 412 Bodywork, 52A, Non-side opening element mechanisms, Sunroof mobile panel: Removal - Refitting**). Initialise the sunroof (see **Electric sunroof: Initialisation**).

YES ↓

Is the anti-pinch triggered when the sunroof reaches the deflector?

NO →

Replace the sunroof (see **MR 412 Bodywork, Non-side opening element mechanisms, Sunroof: Removal - Refitting**).

YES ↓

Remove the sunroof deflector (see **MR 412 bodywork, 52A Non side opening elements mechanism, sunroof deflector: Removal - Refitting**). Initialise the sunroof (see **Electric sunroof: Initialisation**).

Is the anti-pinch still triggered?

NO →

Replace the sunroof deflector (see **MR 412 bodywork, 52A Non-side opening elements mechanism, sunroof deflector: Removal - Refitting**). Initialise the sunroof (see **Electric sunroof: Initialisation**).

YES ↓

Replace the sunroof motor (see **MR 411 mechanical systems, 87D, Electric windows - sunroof, Electric sunroof motor: Removal - Refitting**).