KOLEOS

8 Electrical equipment

87D ELECTRICAL WINDOW

V1 **Edition Anglaise**

1. SCOPE OF THIS DOCUMENT

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

Vehicle(s): **KOLEOS** *Function concerned:* **Electrical window**	*Computer name:* **Electrical window control unit**

2. PREREQUISITES FOR FAULT FINDING

Documentation type

Fault finding procedures (this manual):
– Assisted fault finding (integrated into the **diagnostic tool**)

Wiring Diagrams:
– Visu-Schéma (CD-ROM)

Type of diagnostic tools
– CLIP

Special tooling required

	Special tooling required
	Multimeter
Mot 1681	**TEST PIN KIT**

3. RECAP

Procedure

Process as follows:
The UCH will feed + after ignition for **1 hour** by applying insert the card in the reader and press the start button for ignition on.
Pressing the Start button again or removing the card from the card reader stop the + after ignition feed but the + after ignition feed again by press the start button for ignition on.

Faults

Faults are declared as either present or stored (depending on whether they appeared in a certain context and have disappeared since, or whether they remain present but have not been diagnosed within the current context).

The **present** or **stored** status of faults should be taken into consideration when the **diagnostic tool** is switched on after the + after ignition feed (without any system components being active).

For a **present fault**, apply the procedure described in the **Interpretation of faults** section.

For a **stored fault**, note the faults displayed and apply the instructions in the Notes section.

If the fault is **confirmed** when the instructions in the Notes section are applied, the fault is present. Deal with the fault.

If the fault is **not confirmed**, check:
– the electrical lines that connect to the faulty part
– the connectors for these lines (for oxidation, bent pins, etc.),
– the resistance of the component detected as faulty,
– the condition of the wires (melted or split insulation, wear).

WARNING:
Deal first with instrument panel faults (e.g. Particle filter warning light).
Then carry out scheduled maintenance on the vehicle.

Conformity check

The aim of the conformity check is to check data that do not produce a fault diagnostic tool because the data is inconsistent.
Therefore, this stage is used to:
– carry out fault finding on faults that do not have a fault display, and which may correspond to a customer complaint,
– check that the system is operating correctly and that there is no risk of a fault recurring after repairs.

The conformity check is a fault finding procedure carried out using the interpretation of statuses and parameters.

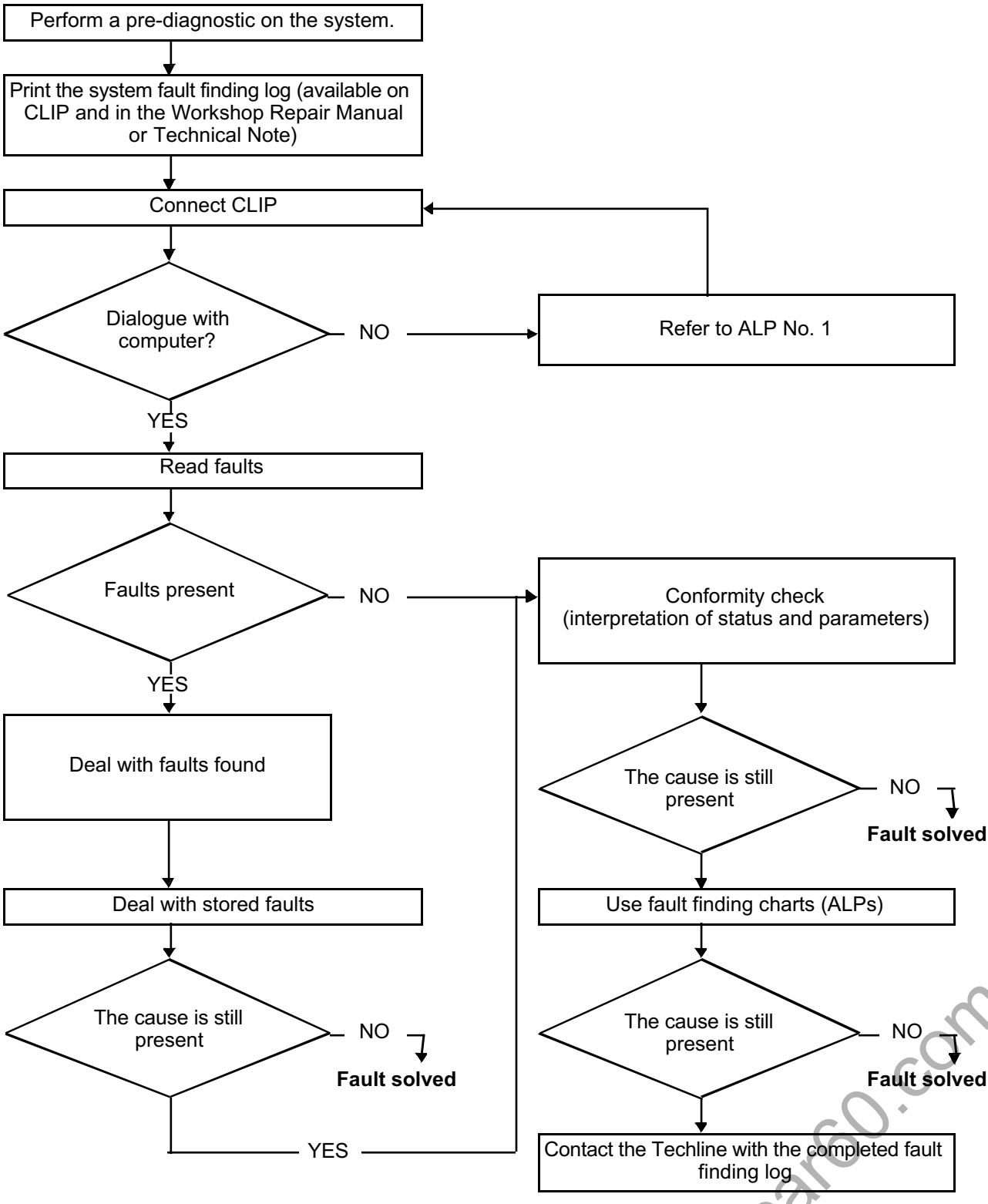
If a status is not behaving normally or a parameter is outside the permitted tolerance values, consult the corresponding fault finding page (see Interpretation of Status and Parameters).

Customer complaints - Fault finding chart

If the test with the **diagnostic tool** is OK but the customer complaint is still present, the fault should be processed by **customer complaints**.

A summary of the overall procedure to follow is provided on the following page in the form of a flow chart.

4. FAULT FINDING PROCEDURE



4. FAULT FINDING PROCEDURE (continued)

Wiring check

Fault finding problems
Disconnecting the connectors and/or manipulating the wiring harness may temporarily remove the cause of a fault.
Electrical measurements of the voltage, resistance and insulation are generally correct, especially if the fault is not present when analysis is done (stored fault).

Visual inspection
Look for damage under the bonnet and in the passenger compartment.
Carefully check the fuses, insulators and wiring harness routing.
Look for signs of oxidation.

Tactile inspection
While manipulating the wiring harness, use the **diagnostic tool** to note any change in fault status from **stored** to **present**.
Make sure that the connectors are properly locked.
Apply light pressure to the connectors.
Twist the wiring harness.
If there is a change in status, try to locate the source of the fault.

Inspection of each component
Disconnect the connectors and check the appearance of the clips and tabs, as well as their crimping (no crimping on the insulating section).
Make sure that the clips and tabs are properly locked in the sockets.
Check that no clips or tabs have been dislodged during connection.
Check the clip contact pressure using an appropriate model of tab.

Resistance check
Check the continuity of entire lines, then section by section.
Look for a short circuit to earth, to **+ 12 V** or to another wire.

If a fault is detected, repair or replace the wiring harness.

5. FAULT FINDING LOG

IMPORTANT!

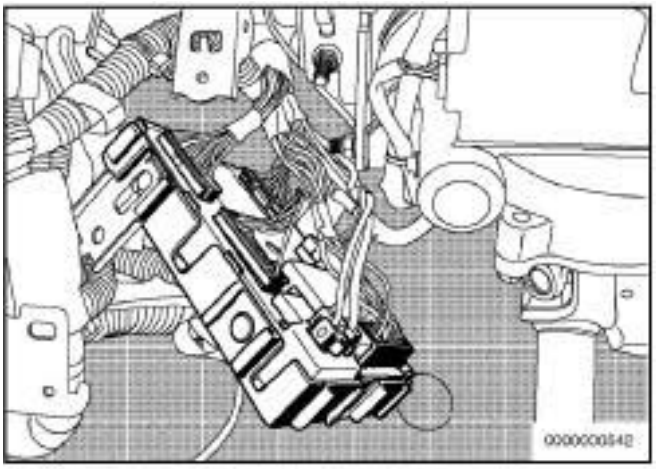
IMPORTANT
Any fault on a complex system requires thorough fault finding with the appropriate tools. The FAULT FINDING LOG, which should be completed during the procedure, enables you to keep track of the procedure which is carried out. It is an essential document when consulting the manufacturer.

IT IS THEREFORE MANDATORY TO FILL OUT A FAULT FINDING LOG EACH TIME FAULT FINDING IS CARRIED OUT.

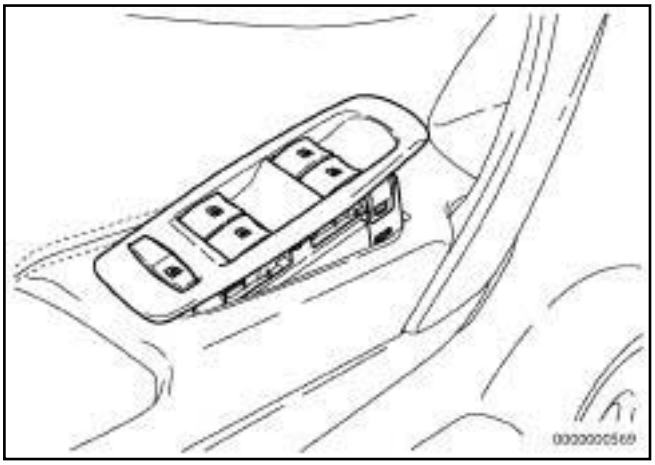
You will always be asked for this log:
- when requesting technical assistance from Techline,
- for approval requests when replacing parts for which approval is mandatory,
- to be attached to monitored parts for which reimbursement is requested. The log is needed for warranty reimbursement, and enables better analysis of the parts removed.

6. SAFETY ADVICE

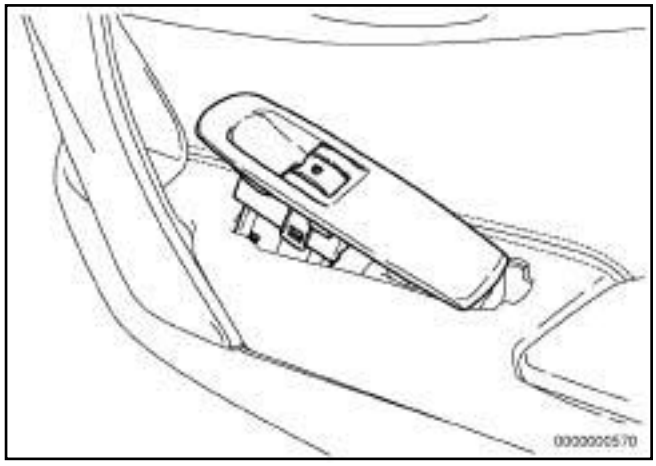
The safety instructions must be followed at all times when working on components, to avoid damage or injury:
– check the battery voltage to avoid incorrect operation of computer functions,
– use the proper tools.



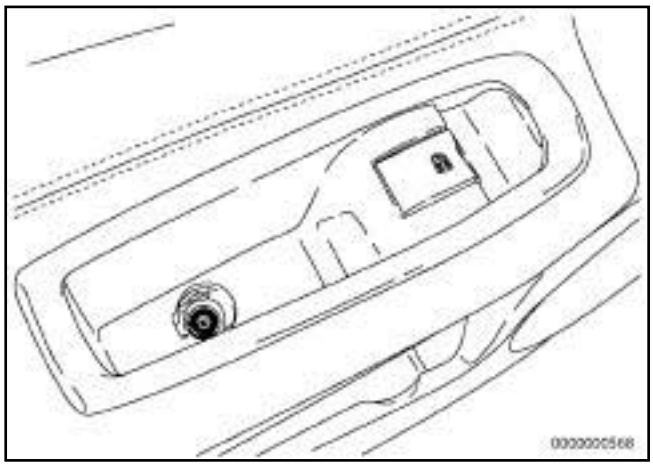
1. UCH



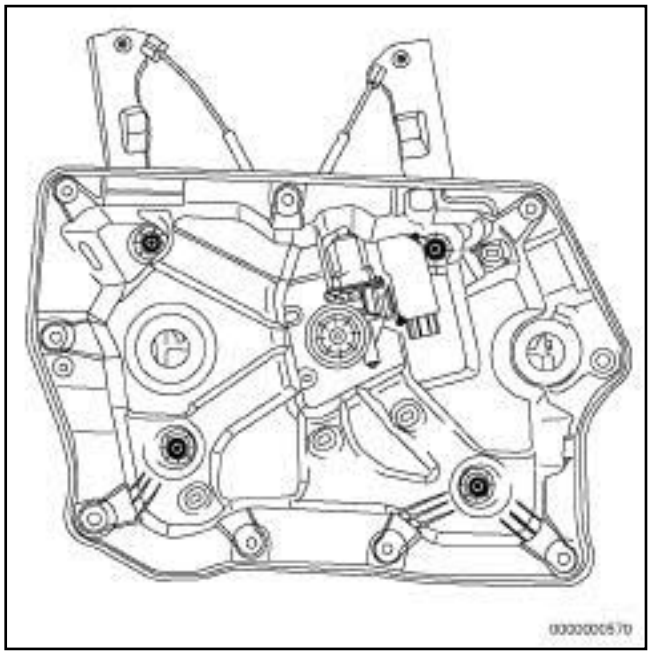
2. Driver electric window switch (Driver anti pinch)



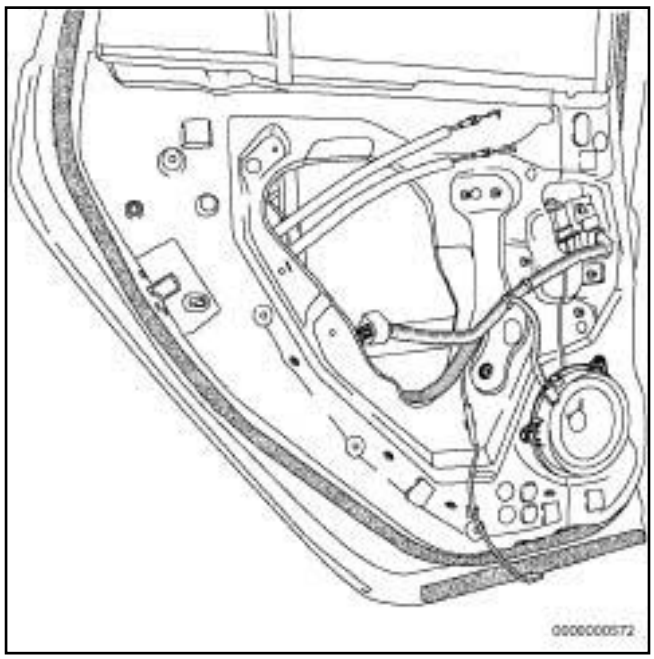
3. Passenger electric window switch



4. Rear window switch



5. Driver window motor

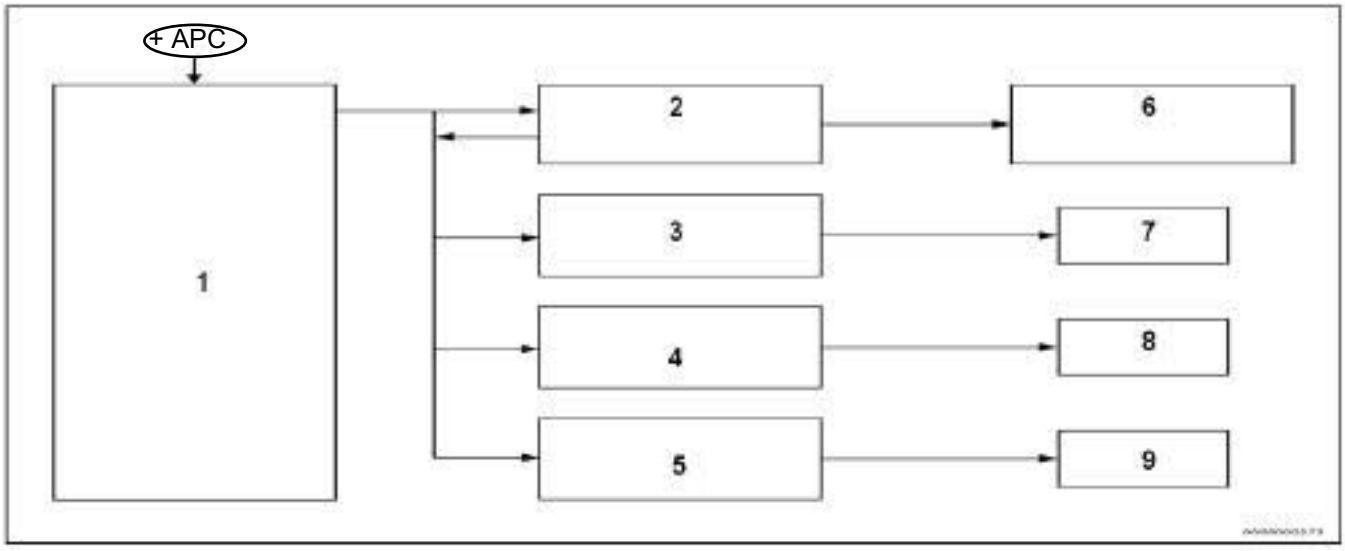


6. Rear window motor

- The electric window switch opens or closes the electrical window.
- The control panel on driver side enables to open and close all windows. (Driver anti pinch window only)
- The UCH controls the operation of the one-touch control windows.
- The electric window motors enable the window to be opened or closed.
- Anti-pinch control is possible by the electric window motors.

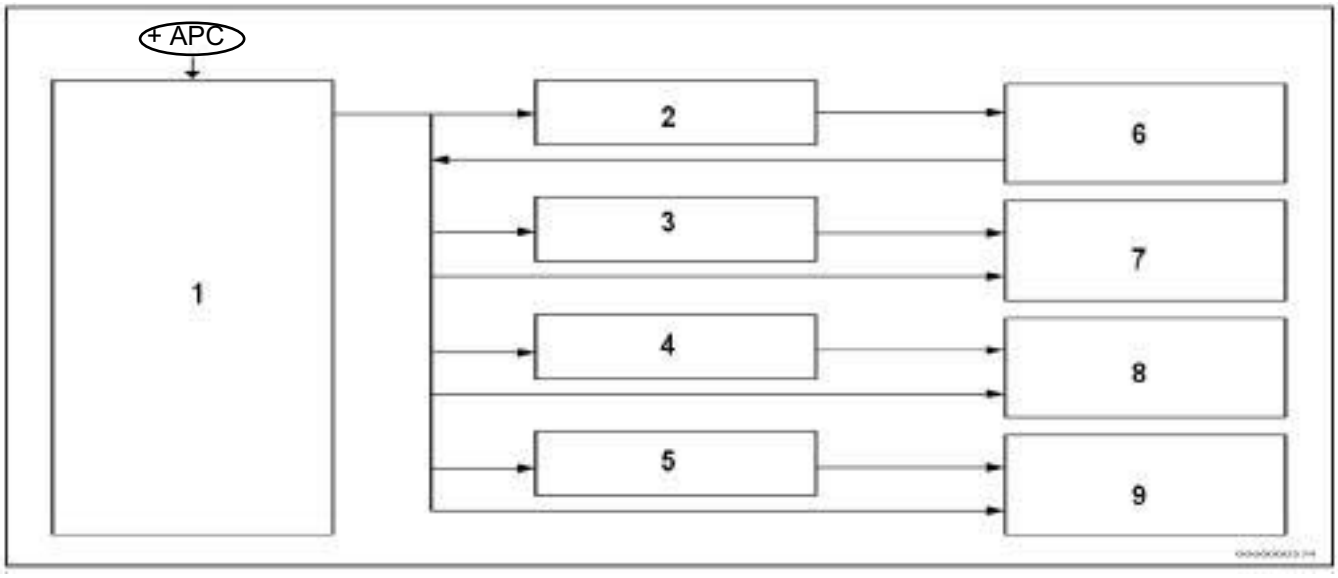
Electrical window operating Diagram

Driver side anti pinch



1. UCH: Passenger compartment computer
2. Driver electrical window switch
3. Passenger electrical window switch
4. Rear LH electrical window switch
5. Rear RH electrical window switch
6. Driver electrical window motor
7. Passenger electrical window motor
8. Rear LH electrical window motor
9. Rear RH electrical window motor

4 doors anti pinch



1. UCH: Passenger compartment computer
2. Driver electrical window switch
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4. Rear LH electrical window switch
5. Rear RH electrical window switch
6. Driver electrical window motor
7. Passenger electrical window motor
8. Rear LH electrical window motor
9. Rear RH electrical window motor

Types

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

Driver anti pinch window
- Driver window switch only has anti pinch function. Opening/closing all windows is possible by main control panel on driver side.
- Passenger and rear window switches can opening/closing the corresponding window.

4 doors anti pinch windows
- Driver, Passenger and rear switches can only open/close the corresponding window.

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.)

WARNING
The anti-pinch function only works if the windows have been correctly initialized (see **Initialization**).

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 initialized.

Note:
A non-initialized 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 **10 seconds**.

Causes of loss of initialization:

– 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.
– f the correct position was not initialized (obstacle), operation of the window beyond that point will be in jerks (**50 mm** stages).

DRIVER ANTI PINCH WINDOWS

NO ELECTRIC WINDOW OPERATION	ALP1
ONLY THE DRIVER WINDOW DOES NOT OPERATE AT ALL WITH THE SWITCH ON THE DRIVER SIDE ONLY	ALP2
THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH THE PASSENGER SWITCH ONLY	ALP3
THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH THE SWITCH ON THE DRIVER SIDE ONLY	ALP4
REAR LEFT HAND SIDE WINDOW DOES NOT OEPRATE AT ALL WITH THE REAR LEFT HAND SWITCH ONLY	ALP5
REAR LEFT HAND SIDE WINDOW DOES NOT OEPRATE AT ALL WITH THE SWITCH ON THE DRIVER SIDE ONLY	ALP6
REAR RIGHT HAND SIDE WINDOW DOES NOT OEPRATE AT ALL WITH THE REAR RIGHT HAND SWITCH ONLY	ALP7
REAR RIGHT HAND SIDE WINDOW DOES NOT OEPRATE AT ALL WITH THE SWITCH ON THE DRIVER SIDE ONLY	ALP8
THE WINDOWS ARE DIFFICULT TO CLOSE OR THE ANTI-PINCH IS TRIGGERED WITHOUT ANY APPARENT OBSTABLES.	ALP9

4 DOORS ANTI PINCH WINDOWS

NO ELECTRIC WINDOW OPERATION	ALP10
ONLY THE DRIVER WINDOW DOES NOT OPERATE AT ALL WITH THE SWITCH ON THE DRIVER SIDE ONLY	ALP11
THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH THE PASSENGER SWITCH ONLY	ALP12
THE PASSENGER WINDOW DOES NOT OPERATE AT ALL WITH THE SWITCH ON THE DRIVER SIDE ONLY	ALP13
REAR LEFT HAND SIDE WINDOW DOES NOT OEPRATE AT ALL WITH THE REAR LEFT HAND SWITCH ONL	ALP14
REAR LEFT HAND SIDE WINDOW DOES NOT OEPRATE AT ALL WITH THE SWITCH ON THE DRIVER SIDE ONLY	ALP15
REAR RIGHT HAND SIDE WINDOW DOES NOT OEPRATE AT ALL WITH THE REAR RIGHT HAND SWITCH ONLY	ALP16
REAR RIGHT HAND SIDE WINDOW DOES NOT OEPRATE AT ALL THE SWITCH ON THE DRIVER SIDE ONLY	ALP17

ALP1	**No electronic window operation**
Applies to:	**Driver anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the driver window motor **203**, the passenger window motor **204**, the rear right hand motor **201**, the rear left hand motor **202**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault? — NO → Initialize the window. (see **Initialization**)

YES ↓

(A)

ALP1 CONTINUED 1	

A

YES

Remove the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector.
Measure the voltage between the connection **21C** and **MZQ,** the connection **21E** and **MZQ,** the connection **21AA** and **MZQ**. (Push and hold the switch at closing or opening position while the voltage is measured).
– 1st closing contact:
Approximately **12V** on the connection **21C**
Approximately **0V** on the connection **21E**
– 2nd closing contact:
Approximately **12V** on the connection **21AA**
– 1st opening contact:
Approximately **0V** on the connection **21C**
Approximately **12V** on the connection **21E**
– 2nd opening contact:
Approximately **12V** on the connection **21AA**

Is the voltage correct?

NO → Replace the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Front electric window switches on driver's door: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

B

ALP1 CONTINUED 2

B

YES

Check **the continuity and insulation** of the following connections:
- connection code **21C**,
- connection code **21E**,

between the driver window switch **132** and the driver window motor **203**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the driver window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

→ Run fault finding using **ALP 3, ALP 5 and ALP 7**.

ALP2	**Only driver window does not operate at all with the switch on the driver side.**
Applies to:	**Driver anti pinch window**

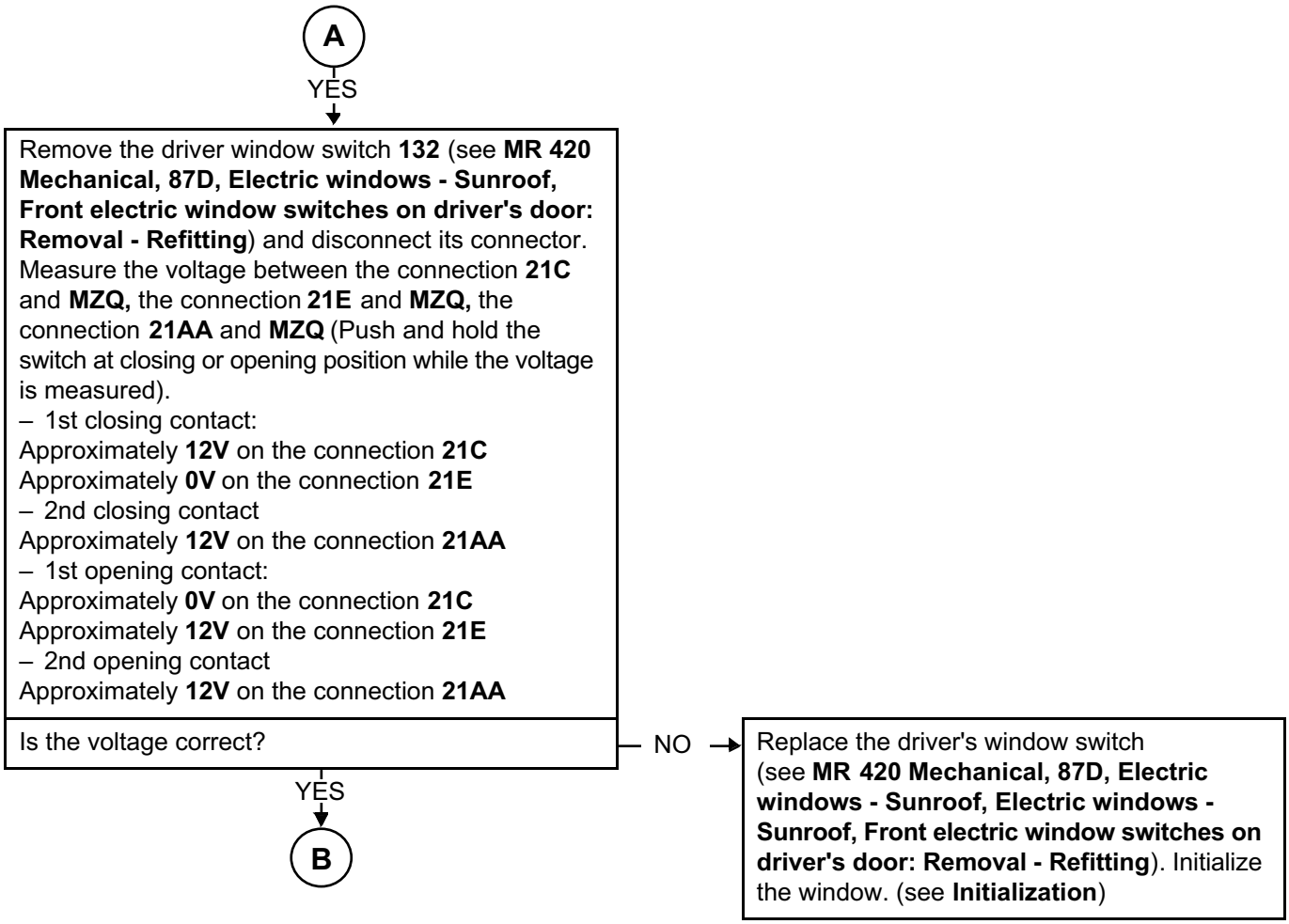
NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the driver window motor **203**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault? — NO → Initialize the window. (see **Initialization**)

YES

ALP2 CONTINUED 1	



ALP2 CONTINUED 2	

B

YES

Check **the continuity and insulation** of the following connections:
- connection code **21C**,
- connection code **21E**,

between the driver window switch **132** and the driver window motor **203**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the driver window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP3	**The passenger window does not operate at all with the passenger switch only.**
Applies to:	**Driver anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for UCH **645** using CLIP **(87B, Passenger compartment computer)**.
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the passenger window motor **204**.
If the connection or connections are faulty and if the repair method exists, (see T**echnical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault? — NO → Initialize the window. (see **Initialization**)

YES

A

ALP3 CONTINUED 1	

(A)

YES

Remove the passenger window switch **133** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector.
Measure the voltage between the connection **22U** and **MZQ,** the connection **22V** and **MZQ** (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **22U**
Approximately **0V** on the connection **22V**
– Opening contact:
Approximately **0V** on the connection **22U**
Approximately **12V** on the connection **22V**

Is the voltage correct?

NO → Replace the passenger window switch **133** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Front electric window switch on the passenger door: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

(B)

ALP3 CONTINUED 2	

B

YES

Check **the continuity and insulation** of the following connections:
- connection code **22U**,
- connection code **22V**,

between the passenger window switch **133** and the passenger window motor **204**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the passenger window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP4	**The passenger window does not operate at all with the switch on the driver side.**
Applies to:	**Driver anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the passenger window motor **204**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault? — NO → Initialize the window. (see **Initialization**)

YES

ALP4 CONTINUED 1	

(A)

YES

Remove the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector.
Measure the voltage between the connection **22A** and **MZQ,** the connection **22B** and **MZQ** (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **22A**
Approximately **0V** on the connection **22B**
– Opening contact:
Approximately **0V** on the connection **22A**
Approximately **12V** on the connection **22B**

Is the voltage correct?

NO → Replace the driver window switch (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Front electric window switch on the passenger door: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

(B)

ALP4 CONTINUED 2

B

YES

Check **the continuity and insulation** of the following connections:
- connection code **22A**,
- connection code **22B**,

between the driver window switch **132** and the passenger window switch **133**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Measure the voltage between the connection **22U** and **MZQ,** the connection **22V** and **MZQ**. (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **22U**
Approximately **0V** on the connection **22V**
– Opening contact:
Approximately **0V** on the connection **22U**
Approximately **12V** on the connection **22V**

Is the voltage correct?

NO → Replace the passenger window switch (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Front electric window switch on the passenger door: Removal - Refitting**).
Initialize the window. (see **Initialization**)

YES

C

ALP4 CONTINUED 3	

C

YES

Check **the continuity and insulation** of the following connections:
- connection code **22U**,
- connection code **22V**,

between the passenger window switch **133** and the passenger window motor **204**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the passenger window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP5	**Rear left hand side window does not operate at all with the rear left hand switch only.**
Applies to:	**Driver anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the rear left hand window motor **202**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

NO → Initialize the window. (see **Initialization**)

YES

A

ALP5 CONTINUED	

A

YES

Remove the rear left hand window switch **131** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Rear electric window switch: Removal - Refitting**) and disconnect its connector.
Measure the voltage between the connection **23C** and **MZQ,** the connection **23D** and **MZQ**. (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **23C**
Approximately **0V** on the connection **23D**
– Opening contact:
Approximately **0V** on the connection **23C**
Approximately **12V** on the connection **23D**

Is the voltage correct?

NO → Replace the rear left hand window switch **131** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Rear electric window switch: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **23C,**
• connection code **23D,**
between the rear left hand window switch **131** and the rear left t window motor **202**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the rear left hand window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Rear side door electric window mechanism: Removal - Refitting**).

ALP6	**Rear left hand side window does not operate at all with the switch on the driver side.**
Applies to:	**Driver anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the rear left hand window motor **202**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

— NO → Initialize the window. (see **Initialization**)

YES

ALP6 CONTINUED 1	

(A)

YES

Remove the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector. Measure the voltage between the connection **23J** and **MZQ,** the connection **23K** and **MZQ**. (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **23J**
Approximately **0V** on the connection **23K**
– Opening contact:
Approximately **0V** on the connection **23J**
Approximately **12V** on the connection **23K**

Is the voltage correct?

NO → Replace the rear left hand window switch **131** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Rear electric window switch: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **23J**,
• connection code **23K**,
between the driver window switch **132** and the rear left hand window switch **131**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

(B)

ALP6 CONTINUED 2

B

YES

Measure the voltage between the connection **23C** and **MZQ,** the connection **23D** and **MZQ**. (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **23C**
Approximately **0V** on the connection **23D**
– Opening contact:
Approximately **0V** on the connection **23C**
Approximately **12V** on the connection **23D**

Is the voltage correct? — NO → Replace the rear left hand window switch **131** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Rear electric window switch: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **23C**,
• connection code **23D**,
between the rear left hand window switch **131** and the the rear left hand window motor **202**.

Is the connection correct? — NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the rear left hand window switch (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP7	**Rear right hand side window does not operate at all with the rear right hand switch only.**
Applies to:	**Driver anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the rear right hand window motor **201**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault? — NO → Initialize the window. (see **Initialization**)

YES

A

ALP7 CONTINUED	

A

YES

Remove the rear right hand window switch **130** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Rear electric window switch: Removal - Refitting**) and disconnect its connector.
Measure the voltage between the connection **23A** and **MZQ,** the connection **23B** and **MZQ**. (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **23A**
Approximately **0V** on the connection **23B**
– Opening contact:
Approximately **0V** on the connection **23A**
Approximately **12V** on the connection **23B**

Is the voltage correct?

NO → Replace the rear right hand window switch **130** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Rear electric window switch: Removal - Refitting**).
Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **23A**,
• connection code **23B**,
between the rear right hand window switch **130** and the rear left t window motor **202**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the rear right hand window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Rear side door electric window mechanism: Removal - Refitting**).

ALP8	**Rear right hand side window does not operate at all with the switch on the driver side.**
Applies to:	**Driver anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the rear right hand window motor **201**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

NO → Initialize the window. (see **Initialization**)

YES

A

ALP8 CONTINUED 1	

(A)

YES

Remove the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector. Measure the voltage between the connection **23G** and **MZQ,** the connection **23H** and **MZQ**. (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **23G**
Approximately **0V** on the connection **23H**
– Opening contact:
Approximately **0V** on the connection **23G**
Approximately **12V** on the connection **23H**

Is the voltage correct?

NO → Replace the rear right hand window switch **130** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Rear electric window switch: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **23G**,
• connection code **23H**,
between the driver window switch **132** and the rear right hand window switch **130**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

(B)

ALP8 CONTINUED 2

B

YES

Measure the voltage between the connection **23A** and **MZQ,** the connection **23B** and **MZQ**. (Push and hold the switch at closing or opening position while the voltage is measured).
– Closing contact:
Approximately **12V** on the connection **23A**
Approximately **0V** on the connection **23B**
– Opening contact:
Approximately **0V** on the connection **23A**
Approximately **12V** on the connection **23B**

Is the voltage correct? — NO → Replace the rear right hand window switch **130** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Rear electric window switch: Removal - Refitting**).
Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **23A**,
• connection code **23B**,
between the rear right hand window switch **130** and the the rear right hand window motor **201**.

Is the connection correct? — NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the rear right hand window switch (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP9	**The window is difficult to close or the anti-pinch is triggered without any apparent obstacles**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Check door window sliding part. (A foreign material adheres to window glass or window glass run wear or deformation.)
Replace the electric window.

ALP10	**No electronic window operation**
Applies to:	**4 door anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for electrical window thermal protection 1 **1984**.
Check for electrical window thermal protection 2 **1985**.
Check whether **+ 12 V** is supplied on connections **21ZA**.
Check whether **+ 12 V** is supplied on connections **21ZB**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the driver window motor **203**, the driver window switch **132**, the passenger window motor **204** and the passenger window switch **133.**
Check the continuity of the **earth** on connection **MZT** of the rear right hand motor **201** and the rear right hand window switch **130.**
Check the continuity of the **earth** on connection **MZS** of the rear left hand motor **202** and rear left hand window switch **131**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

YES → **A**

NO → Initialize the window. (see **Initialization**)

ALP10 CONTINUED 1	

(A)

YES

Remove the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector.
Measure the voltage on the connection **21C, 21E** and **21AA**.
– 1st closing contact:
Approximately **12V** on the connection **21C**
Approximately **0V** on the connection **21E**
– 2nd closing contact
Approximately **12V** on the connection **21AA**
– 1st opening contact:
Approximately **0V** on the connection **21C**
Approximately **12V** on the connection **21E**
– 2nd opening contact
Approximately **12V** on the connection **21AA**

Is the voltage correct?

NO → Replace the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Front electric window switches on driver's door: Removal - Refitting**).
Initialize the window.
(see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **21C**,
• connection code **21E**,
between the driver window switch **132** and the driver window motor **203.**

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

(B)

ALP10 CONTINUED 2	

B

YES

Check **the continuity and insulation** of the following connections:
- connection code **23X,**

between the driver window switch **132** and the driver window motor **203.**

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the driver window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

NO → Run fault finding using **ALP 12, ALP 14 and ALP 16.**

ALP11	**Only driver window does not operate at all with the switch on the driver side.**
Applies to:	**4 door anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for electrical window thermal protection 1 **1984**.
Check whether **+ 12 V** is supplied on connections **21ZA**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the driver window motor **203** and the driver window switch **132**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

YES → A

NO → Initialize the window. (see **Initialization**)

ALP11 CONTINUED	

(A)

YES

Remove the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector.
Measure the voltage on the connection **21C, 21E** and **21AA**.
– 1st closing contact:
Approximately **12V** on the connection **21C**
Approximately **0V** on the connection **21E**
– 2nd closing contact
Approximately **12V** on the connection **21AA**
– 1st opening contact:
Approximately **0V** on the connection **21C**
Approximately **12V** on the connection **21E**
– 2nd opening contact
Approximately **12V** on the connection **21AA**

Is the voltage correct?

NO → Replace the driver's window switch (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Electric windows -Sunroof, Front electric window switches on driver's door: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **21C**,
• connection code **21E**,
between the driver window switch **132** and the driver window motor **203**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the driver window motor
(see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP12	**The passenger window does not operate at all with the passenger switch only.**
Applies to:	**4 door anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for electrical window thermal protection 1 **1984**.
Check whether **+ 12 V** is supplied on connections **21ZA**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the passenger window motor **204** and the passenger window switch **133.**
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

YES → A

NO → Initialize the window. (see **Initialization**)

ALP12 CONTINUED	

(A)

YES

Remove the passenger window switch **133** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector.
Measure the voltage on the connection **22A, 22B** and **22AA**.
– 1st closing contact:
Approximately **12V** on the connection **22A**
Approximately **0V** on the connection **22B**
– 2nd closing contact
Approximately **12V** on the connection **22AA**
– 1st opening contact:
Approximately **0V** on the connection **22A**
Approximately **12V** on the connection **22B**
– 2nd opening contact
Approximately **12V** on the connection **22AA**

Is the voltage correct?

NO → Replace the passenger window switch **133** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Front electric window switch on the passenger door: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **22A**,
• connection code **22B**,
between the passenger window switch **133** and the passenger window motor **204**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the passenger window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP13	**The passenger window does not operate at all with the switch on the driver side.**
Applies to:	**4 door anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for electrical window thermal protection 1 **1984**.
Check whether **+ 12 V** is supplied on connections **21ZA**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the passenger window motor **204** and the driver window switch **132**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

YES → A

NO → Initialize the window. (see **Initialization**)

ALP13 CONTINUED	

A

YES

Check **the continuity and insulation** of the following connections:
- connection code **23X**,

between the driver window switch **132** and the passenger window motor **204.**

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the passenger window motor (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP14	**Rear left hand side window does not operate at all with the rear left hand switch only.**
Applies to:	**4 door anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for electrical window thermal protection 2 **1985**.
Check whether **+ 12 V** is supplied on connections **21ZB**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZS** of the rear left hand window motor **202** and the rear left hand window switch **131**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

YES → A

NO → Initialize the window. (see **Initialization**)

ALP14 CONTINUED	

A

YES

Remove the rear left hand window switch **131** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Rear electric window switch: Removal - Refitting**) and disconnect its connector.
Measure the voltage on the connection **23C, 23D** and **23BA**.
– 1st closing contact:
Approximately **12V** on the connection **23C**
Approximately **0V** on the connection **23D**
– 2nd closing contact
Approximately **12V** on the connection **23BA**
– 1st opening contact:
Approximately **0V** on the connection **23C**
Approximately **12V** on the connection **23D**
– 2nd opening contact
Approximately **12V** on the connection **23BA**

Is the voltage correct?

NO → Replace the rear left hand window switch **131** (see **MR 420 Mechanical, 87D, Electric windows - Sunroof, Rear electric window switch: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **23C**,
• connection code **23D**,
between the rear left hand window switch **131** and the rear left t window motor **202**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the rear left t window motor **202**.
(see **MR 420 bodywork, 51A, Side opening element mechanisms, Rear side door electric window mechanism: Removal - Refitting**).

ALP15	**Rear left hand side window does not operate at all with the switch on the driver side.**
Applies to:	**4 door anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for electrical window thermal protection 1 **1984**.
Check for electrical window thermal protection 2 **1985**.
Check whether **+ 12 V** is supplied on connections **21ZA**.
Check whether **+ 12 V** is supplied on connections **21ZB**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the driver window switch **132**.
Check the continuity of the **earth** on connection **MZS** of the rear left hand motor **202**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

YES → A

NO → Initialize the window. (see **Initialization**)

ALP15 CONTINUED	

A

YES

Remove the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector.
Check **the continuity and insulation** of the following connections:
- connection code **23X**,

between the driver window switch **132** and the rear left hand window motor **202**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the rear left-hand window motor **202**.
(see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).

ALP16	**Rear right hand side window does not operate at all with the rear right hand switch only.**
Applies to:	**4 door anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for electrical window thermal protection 1 **1984**.
Check for electrical window thermal protection 2 **1985**.
Check whether **+ 12 V** is supplied on connections **21ZA**.
Check whether **+ 12 V** is supplied on connections **21ZB**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZT** of the rear right hand window switch **130** and the rear right hand window motor **201**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

YES → A

NO → Initialize the window. (see **Initialization**)

ALP16 CONTINUED	

(A)

YES

Remove the rear right hand window switch **130** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Rear electric window switch: Removal - Refitting**) and disconnect its connector.

Measure the voltage on the connection **23A, 23B** and **23AA**.

– 1st closing contact:
Approximately **12V** on the connection **23A**
Approximately **0V** on the connection **23B**
– 2nd closing contact
Approximately **12V** on the connection **23AA**
– 1st opening contact:
Approximately **0V** on the connection **23A**
Approximately **12V** on the connection **23B**
– 2nd opening contact
Approximately **12V** on the connection **23AA**

Is the voltage correct?

NO → Replace the rear right hand window switch **130** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Rear electric window switch: Removal - Refitting**). Initialize the window. (see **Initialization**)

YES

Check **the continuity and insulation** of the following connections:
• connection code **23A**,
• connection code **23B**,
between the rear right hand window switch **130** and the rear right t window motor **201**.

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the rear right t window motor **201**.
(see **MR 420 bodywork, 51A, Side opening element mechanisms, Rear side door electric window mechanism: Removal - Refitting**).

ALP17	**Rear right hand side window does not operate at all with the switch on the driver side.**
Applies to:	**4 door anti pinch window**

NOTES	**After charging the battery to switch ignition ON, carry out various checks.**

Switch on the + after ignition feed.
Check whether **+ 12 V** is supplied on connections **A1** and **BP48**.
Check for electrical window thermal protection 1 **1984**.
Check for electrical window thermal protection 2 **1985**.
Check whether **+ 12 V** is supplied on connections **21ZA**.
Check whether **+ 12 V** is supplied on connections **21ZB**.
Check for UCH **645** using CLIP (**87B, Passenger compartment computer**).
If the fault is still present, replace the UCH (see **MR 420 Mechanical, 87B, Passenger compartment computer: Removal - Refitting**).
Check the continuity of the **earth** on connection **MZQ** of the driver window switch **132**.
Check the continuity of the **earth** on connection **MZT** of the driver window switch **132** and the rear right hand motor **201**.
If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

Is there still any fault?

YES → A

NO → Initialize the window. (see **Initialization**)

ALP17 CONTINUED	

(A)

YES

Remove the driver window switch **132** (see **MR 420 Mechanical, 87D, Electric windows -Sunroof, Front electric window switches on driver's door: Removal - Refitting**) and disconnect its connector.

Check **the continuity and insulation** of the following connections:
- connection code **23X**,

between the driver window switch **132** and the rear right hand window motor **201.**

Is the connection correct?

NO → If the connection or connections are faulty and if the repair method exists, (see **Technical Note 6015A, Repairing electrical wiring, Wiring: Precautions for repair**) repair the wiring, otherwise replace it.

YES

Replace the rear right hand window switch (see **MR 420 bodywork, 51A, Side opening element mechanisms, Front side door electric window mechanism: Removal - Refitting**).