

# 2003 X-TYPE - Roof Opening Panel - 501-17

## Roof Opening Panel

### Principles of Operation

#### Roof Opening Panel Control Module

Battery power is continuously supplied to the roof opening panel control module. However, the roof opening panel will only operate from the roof opening panel switch with the ignition switch in the RUN or ACCY position. The global close feature is controlled by two circuits from the generic electronics control module (GEM). The two circuits must be at ground potential before the roof opening panel control module will acknowledge the roof opening panel switch. When the ignition switch is turned to RUN or ACCY, the GEM provides ground to these circuits.

The roof opening panel control module incorporates soft stops at the end of all travel positions. The roof opening panel control module monitors the internal switches to determine the roof opening glass position and the soft stops. The internal switches are activated by the roof opening panel motor rotation.

The roof opening panel control module supplies the power and ground to the roof opening panel motor depending on the ordered function. Power is supplied to the roof opening panel for a maximum of 12 seconds. Under normal operation, position is monitored by the roof opening panel control module and power is removed from the roof opening panel motor as soon as the roof opening panel reaches the commanded position.

#### Roof Opening Panel Switch

Two circuits connect the roof opening panel switch to the roof opening panel control module. One circuit controls open and down operation. The other circuit controls the tilt and close operation. The roof opening panel control module monitors these lines for voltage fluctuation to determine which function was selected.

With the ignition switch in the RUN or ACCY position, the roof opening panel supplies a five volt reference voltage to three control lines. Activation of the roof opening panel switch connects one or more of these lines to the common return which pulls the line low. The roof opening panel control module will sense the line or lines being connected to the common line and carry out the appropriate function.

The express open function connects the open and tilt circuits to the common return when the roof opening panel switch is moved rearward to the second detent position. The operator-controlled open function connects the open circuit to the common return. The close function connects the close circuit to the common causing the roof opening panel to close from a slide or vent position.

#### Global Close

One circuit connects the GEM to the roof opening panel control module for this function. Global close operation for the roof opening panel is controlled by this circuit being grounded by the GEM.

When the ignition switch is in the RUN or ACCY position, the GEM grounds this circuit allowing normal operation of the roof opening panel from the roof opening panel switch. Global close operation is only available with the ignition in the OFF position and the ignition key removed.

When global close operation is selected, the roof opening panel switch is not recognized by the roof opening panel control module throughout the operation and for five seconds after the operation is completed.

With the ignition switch in the OFF position, the roof opening panel control module supplies a constant voltage to this circuit. The roof opening panel control module monitors these lines for a low state, caused by the GEM grounding the line, to determine the ordered global function by the GEM.

Global close is commanded by the GEM grounding control line one. Line two will remain at previous voltage.

If both lines have voltage, the roof opening panel will be inoperative.

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## Inspection and Verification

1. Verify the customer concern by operating the system.
2. Visually inspect for obvious signs of mechanical and electrical damage.

## Visual Inspection Chart

Mechanical	Electrical
<ul style="list-style-type: none"><li>• Roof opening panel track and rail assembly</li><li>• Roof opening panel glass seal</li><li>• Roof opening panel glass adjustment</li><li>• Roof opening panel synchronization</li></ul>	<ul style="list-style-type: none"><li>• Central junction box (CJB) fuse 73 (15A)</li><li>• Damaged, loose or corroded connectors</li><li>• Wiring harness</li><li>• Roof opening panel switch</li><li>• Roof opening panel motor</li><li>• Roof opening panel control module</li></ul>

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, verify the symptom and refer to the Symptom Chart.

## Symptom Chart

Refer to the Wiring Diagram manual for the connectors cited in the pinpoint tests.

### Condition(s):

#### ***The roof opening panel has excessive wind noise***

##### **Possible Source(s):**

- Incorrect adjustment.
- Roof opening panel glass seal.

##### **Action(s) to take:**

- GO to <<Pinpoint Test A>>.

#### ***The roof opening panel leaks***

##### **Possible Source(s):**

- Incorrect adjustment.
- Roof opening panel frame drain hoses.
- Roof opening panel glass seal.

##### **Action(s) to take:**

- GO to <<Pinpoint Test B>>.

#### ***The roof opening panel is noisy during operation***

##### **Possible Source(s):**

- Roof opening panel glass.
- Roof opening panel.

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- Roof opening panel motor.

**Action(s) to take:**

- GO to <<Pinpoint Test C>>.

***The roof opening panel does not open or close***

**Possible Source(s):**

- Roof opening panel.
- Roof opening panel control module.
- Roof opening panel motor.
- Generic electronics module (GEM).
- Roof opening panel switch.
- Circuitry.

**Action(s) to take:**

- GO to the approved Jaguar diagnostic system.

***The roof opening panel does not open or close in vent position***

**Possible Source(s):**

- Roof opening panel control module.
- Roof opening panel switch.
- Circuitry.

**Action(s) to take:**

- GO to the approved Jaguar diagnostic system.

***The roof opening panel does not stop in flush from any position.***

**Possible Source(s):**

- Roof opening panel adjustment.
- Roof opening panel glass seal.
- Roof opening panel control module.

**Action(s) to take:**

- GO to <<Pinpoint Test D>>.

***The express open is inoperative***

**Possible Source(s):**

- Roof opening panel control module.
- Roof opening panel switch.
- Circuitry.

**Action(s) to take:**

- GO to the approved Jaguar diagnostic system.

### **A : THE ROOF OPENING PANEL HAS EXCESSIVE WIND NOISE**

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## A1 : CHECK THE ROOF OPENING GLASS FIT

1. Cycle the roof opening glass from the full-open to the full-closed position.
2. Inspect the roof opening glass seal for proper fit or damage.

### •Is the roof opening glass seal OK?

-> **Yes**

Goto <<A2>>

-> **No**

INSTALL a new roof opening glass seal. REFER to <<Seal>>. Test the system for normal operation.

## A2 : CHECK THE ROOF OPENING GLASS OPERATION

1. Cycle the roof opening glass from the full-open to the full-closed position.

### •Does the roof opening glass travel to the full-open and the full-closed position?

-> **Yes**

ADJUST the roof opening glass. REFER to <<Roof Opening Panel Alignment>>. If the roof opening glass closes unevenly, CHECK the roof opening panel synchronization. REFER to <<100-00>><<Motor Synchronization—Calibration>>. Test the system for normal operation.

-> **No**

CHECK the roof opening panel glass seal. If necessary, INSTALL a new roof opening panel glass seal. REFER to <<Seal>>. TEST the system for normal operation.

## B : THE ROOF OPENING PANEL LEAKS

### B1 : CHECK THE ROOF OPENING PANEL OPERATION

1. Cycle the roof opening panel glass from the full-open position to the full-closed position.

### •Does the roof opening glass operate smoothly and close tightly?

-> **Yes**

Goto <<B2>>

-> **No**

CHECK the roof opening panel glass alignment. REFER to <<Roof Opening Panel Alignment>>. Test the system for normal operation.

### B2 : CHECK THE ROOF OPENING PANEL FRAME DRAIN TUBES

1. Gain access to the roof opening panel drain tubes.

### •Is there blockage or damage to the roof opening panel drain tubes?

-> **Yes**

Clear the blockage or if necessary, INSTALL a new drain tube. TEST the system for normal operation.

-> **No**

Goto <<B3>>

### B3 : CHECK THE ROOF OPENING PANEL GLASS SEAL

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1. Actuate the roof opening panel glass to the full open position.

•Is the roof opening panel glass seal damaged?

-> **Yes**

INSTALL a new roof opening panel glass seal. REFER to <<Seal>>. TEST the system for normal operation.

-> **No**

REPAIR as necessary. TEST the system for normal operation.

### C : THE ROOF OPENING PANEL IS NOISY DURING OPERATION

#### C1 : CHECK THE OPERATION OF THE ROOF OPENING PANEL GLASS

1. Cycle the roof opening panel glass from the full-open to the full-closed position.

•Is the roof opening panel glass loose?

-> **Yes**

ADJUST the roof opening panel glass. REFER to<<Roof Opening Panel Alignment>>

-> **No**

Goto <<C2>>

#### C2 : CHECK FOR OBSTRUCTIONS

1. Check the roof opening panel track and rail for foreign material, damage or looseness.

•Is the roof opening panel obstructed or damaged?

-> **Yes**

REMOVE the obstruction. If necessary, INSTALL a new roof opening panel frame. REFER to <<Roof Opening Panel Frame>>. TEST the system for normal operation.

-> **No**

Goto <<C3>>

#### C3 : CHECK THE ROOF OPENING PANEL MOTOR

1. Cycle the roof opening glass from the full-open to the full-closed position.

•Does the roof opening panel motor make excessive noise?

-> **Yes**

CHECK the roof opening panel motor for correct mounting. If necessary, INSTALL a new roof opening panel motor . REFER to<<Roof Opening Panel Motor>>

TEST the system for normal operation. If the roof opening panel opens or closes unevenly, ADJUST the roof opening panel motor synchronization. REFER to<<Motor Synchronization—Calibration>>

-> **No**

REFER to <<Roof Opening Panel Alignment>> ADJUST the roof opening panel glass as necessary. TEST the system for normal operation.

### D : THE ROOF OPENING PANEL DOES NOT STOP IN FLUSH FROM ANY POSITION

### D1 : CHECK THE ROOF OPENING PANEL GLASS ADJUSTMENT

1. Check the roof opening panel glass alignment. For additional information, refer to <<Roof Opening Panel Alignment>>.

•Is the roof opening panel glass adjusted correctly?

-> **Yes**

Goto <<D2>>

-> **No**

ADJUST the roof opening panel glass as necessary. TEST the system for normal operation.

### D2 : CHECK THE ROOF OPENING GLASS SEAL

1. Inspect the roof opening panel glass seal for looseness, damage and correct installation.

•Is the roof opening panel glass seal OK and installed correctly?

-> **Yes**

Goto <<D3>>

-> **No**

REPAIR or INSTALL a new roof opening panel glass seal as necessary. For additional information, refer to <<Seal>>. TEST the system for normal operation.

### D3 : CHECK FOR OBSTRUCTION IN THE ROOF OPENING PANEL

1. Inspect the roof opening panel assembly for obstructions in the track.

•Are any obstructions found?

-> **Yes**

REMOVE the obstruction. If necessary, INSTALL a new roof opening panel track and rail assembly. For additional information, refer to <<Roof Opening Panel Frame>>. TEST the system for normal operation.

-> **No**

INSTALL a new roof opening panel control module. For additional information, refer to <<Roof Opening Panel Motor>>