



Informal document N° 14
(28th GRSP, 27 Nov.- 1 Dec. 2000
agenda item 2.4)

**OICA PROPOSAL FOR AMENDMENTS TO ECE REGULATION N° 21
REGARDING POWER OPERATED WINDOWS,
OPENING ROOFS AND PARTITIONS**

I. PROPOSAL

2.15. "Opening" is the maximum unobstructed aperture between the upper edge or the leading edge, depending on the closing direction, of a power-operated window or partition or roof panel and the vehicle structure which forms the boundary of the window, partition or roof panel, when viewed from the interior of the vehicle or, in the case of partition system, from the rear part of the passenger compartment.

To measure an opening, a cylindrical test rod shall (without exerting force) be placed through it ~~normally perpendicular to the edge and perpendicular to the closing direction of the window, roof panel or partition and perpendicular~~ to the edge of the window, roof panel or partition and perpendicular to its closing direction as shown in Annex 9, Figure 1, from the interior up to the exterior of the vehicle or, as applicable, from the rear part of the passenger compartment.

~~2.16. "(Ignition) key" means a specific device that operates the locking system of a vehicle which is built in a way that it can only be operated by this device (key). This definition explicitly includes keyless entry and/or drive authorisation systems~~ "Ignition key" means the device that switches on the electric power supply necessary to start the engine or motor of the vehicle. This definition does not preclude a non mechanical device.

2.17. "Power key" means the device which allows power to be supplied to the power systems of the vehicle. This key may also be the ignition key.

5.8. Power-operated windows, roof panel systems and partition systems

5.8.1. The requirements below apply to power-operated windows / roof-panel systems / partition systems to minimise the possibility of injuries caused by accidental or improper operation.

5.8.2. Normal operating requirements

Except as provided in item 5.8.3., power-operated windows / roof-panel systems / partition systems may be closed under one or more of the following conditions:

5.8.2.1. when the ignition key is inserted in the ignition control in any position of use or in an equivalent condition in case of a ~~keyless entry and/or drive authorization system non mechanical device~~;

5.8.2.2. **when the power key has been used to activate the power supply to the power window, partition and/or sunroof systems;**

5.8.2.3. by muscular force unassisted by power supply of the vehicle;

5.8.2.4. on continuous activation ~~by a locking system on the outside of the vehicle~~ **of a closing system located on the exterior side of the vehicle;**

5.8.2.5. ~~during the interval of time between the moment the ignition has been switched from "on" to "off" and/or the key has been removed or, in case of a keyless entry and/or drive authorization system in an equivalent condition~~ **between the moment the ignition has been switched off or the ignition key has been removed, or an equivalent condition has happened in case of a non mechanical device,** and the moment that neither of the two front doors has been opened sufficiently to permit egress of occupants;

5.8.2.6. when the closing movement of a power-operated window, roof panel or partition starts at an opening not exceeding 4 mm;

5.8.2.7. when the power-operated window of a vehicle door without an upper door frame closes automatically whenever the pertinent door is closed. In this case the maximum opening, as defined in item ~~2.4615.~~, prior to window closing, shall not exceed 12 mm.

5.8.2.8. Remote closing shall be allowed by continuous activation of a remote actuation device, provided **one of** the following conditions ~~are~~ **is** fulfilled:

5.8.2.8.1. the remote actuation device shall be incapable of closing the power-operated window / roof panel / partition from a distance of more than 6 metres from the vehicle;

5.8.2.8.2. the remote actuation device shall be incapable of closing the power-operated window / roof panel / partition in each of the following circumstances:

- **when the distance between the remote actuation device and the vehicle is more than 11 metres,**
- and**
- **when the actuation device and the vehicle are separated by an opaque surface.**

5.8.2.9. One-touch closing shall be permitted only for the power-operated window of the driver's door and the roof panel, and only during the time when the ignition key is in the engine running position. **It is also allowed when the engine has been switched off or the ignition key / power key has been removed, or an equivalent condition has happened in case of a non mechanical device,** as long as ~~none of the front doors was opened wide enough to enable the occupants to leave the vehicle~~ **neither of the two front doors has been opened sufficiently to permit egress of occupants.**

5.8.3. Auto-reversing requirements

~~5.8.3.1.~~ None of the requirements in item 5.8.2. shall apply if a power-operated window / roof panel system / partition **system** is fitted with an auto-reversing device.

5.8.3.1. This device shall reverse the window / roof panel / partition before it exerts a pinch force of more than 100 N within the opening of 200 mm to 4 mm above the top edge of a power-operated window / partition or in front of the leading edge of a sliding roof panel and at the trailing edge of a tilting roof panel.

5.8.3.2. After such an auto-reversal, the window or roof panel or partition shall open to one of the following positions:

5.8.3.2.1. a position that permits a semi-rigid cylindrical rod of a diameter of 200 mm to be placed through the opening at the same contact point(s) used to determine the reversing behaviour in item 5.8.3.1.4;

5.8.3.2.2. a position that represents at least the initial position before closing was initiated;

5.8.3.2.3. a position at least 50 mm more open than the position at the time when reversing was initiated;

5.8.3.2.4. in the case of tilting motion of a roof panel, the maximum angular opening.

5.8.3.3. To check power-operated windows / roof-panel systems / partition systems with reversing devices, a measuring instrument / test rod shall be placed through the opening **from the inside of the vehicle perpendicular to the edge of the window / roof panel / partition and perpendicular to its closing direction as shown in Annex 9, Figure 1, from the interior up to the exterior of the vehicle** or, in the case of a partition system, from the rear part of the passenger compartment, in such a way that the cylindrical surface of the rod contacts any part of the vehicle structure which forms the boundary of the window / roof-panel / partition aperture. The force deflection ratio of the measuring instrument shall be $10 \pm 0.5 \text{ N/mm}$ **with a tolerance of max. 1 N/mm**. The positions of the test rods (**normally** located perpendicular to the window / roof panel / partition edge and perpendicular to the closing direction) are illustrated in Annex 9, Figure 1. **The relative position of the test rod shall be kept during the test. The position of the test rod relative to the edge and the closing direction shall be kept throughout the test.**

5.8.4. Switch location and operation

5.8.4.1. Switches of power-operated windows / roof panels / partitions shall be located or operated in such a way to minimise the risk of accidental closing. The switches shall require continuous actuation for closing except in the case of items 5.8.2.7., 5.8.2.9. or 5.8.3.

5.8.4.2. All rear-window, roof-panel and partition switches intended for use by occupants in the rear of the vehicle shall be capable of being switched off by a driver-controlled switch which is located forward of a vertical transverse plane passing through the R points of the front seats. The driver controlled switch is not required if the rear window, roof panel or partition is equipped with an auto-reversing device. If, however, the driver-controlled switch is present, it shall not be able to override the auto-reversing device.

The driver-controlled switch shall be located so as to minimise any accidental manipulating. It shall be identified by the symbol shown in Annex 9, Figure 2 **Appendix 4** or an equivalent labelling, for example according to ISO 2575:1998 **also reproduced in Annex 9, figure 3.**

5.8.5. Protection devices to the power source

All protection devices, **except fuses**, which are used to prevent damage to the power source in the case of an overload or stalling shall reset themselves after the overload or the automatic switch off. ~~It is not permissible to resume the motion in the closing direction automatically.~~ **After resetting of the protection devices, the motion in the closing direction shall not resume without a deliberate action on the control device.**

5.8.6. Handbook instructions

~~5.8.6.1.~~ The owner's manual of the vehicle shall contain clear instructions relating to the power-operated window / roof panel / partition, including:

5.8.6.1. explanation of possible consequences (entrapment);

5.8.6.2. use of the driver-controlled switch;

5.8.6.3. a "WARNING" message indicating the dangers, particularly to children in the case of improper use / activation of the power-operated windows / roof-panel systems / partition systems. This information should indicate the responsibilities of the driver, including instructions for other occupants and the recommendation to leave the vehicle only if the **ignition key / power key is has been removed** ~~from the ignition lock, or if, in case of a keyless entry and/or drive authorization system, an equivalent condition is ensured.~~ **or in an equivalent condition in case of a non mechanical device;**

5.8.6.4. a "WARNING" message indicating that special care should be taken when using a remote closing system (see item 5.8.2.7), for example to actuate it only when the operator has a clear view of the vehicle to be sure that nobody can be trapped by power-operated windows / roof-panel / partition equipment.

5.8.7. If a power-operated window, roof-opening and/or partition system is installed in a vehicle that can not be tested according to the test procedures mentioned above the approval may be granted if the manufacturer can demonstrate an equal or improved protection- effect for the occupants.

**ANNEX 9
POSITION OF CYLINDRICAL TEST ROD IN THE OPENING ROOF AND WINDOW OPENINGS**

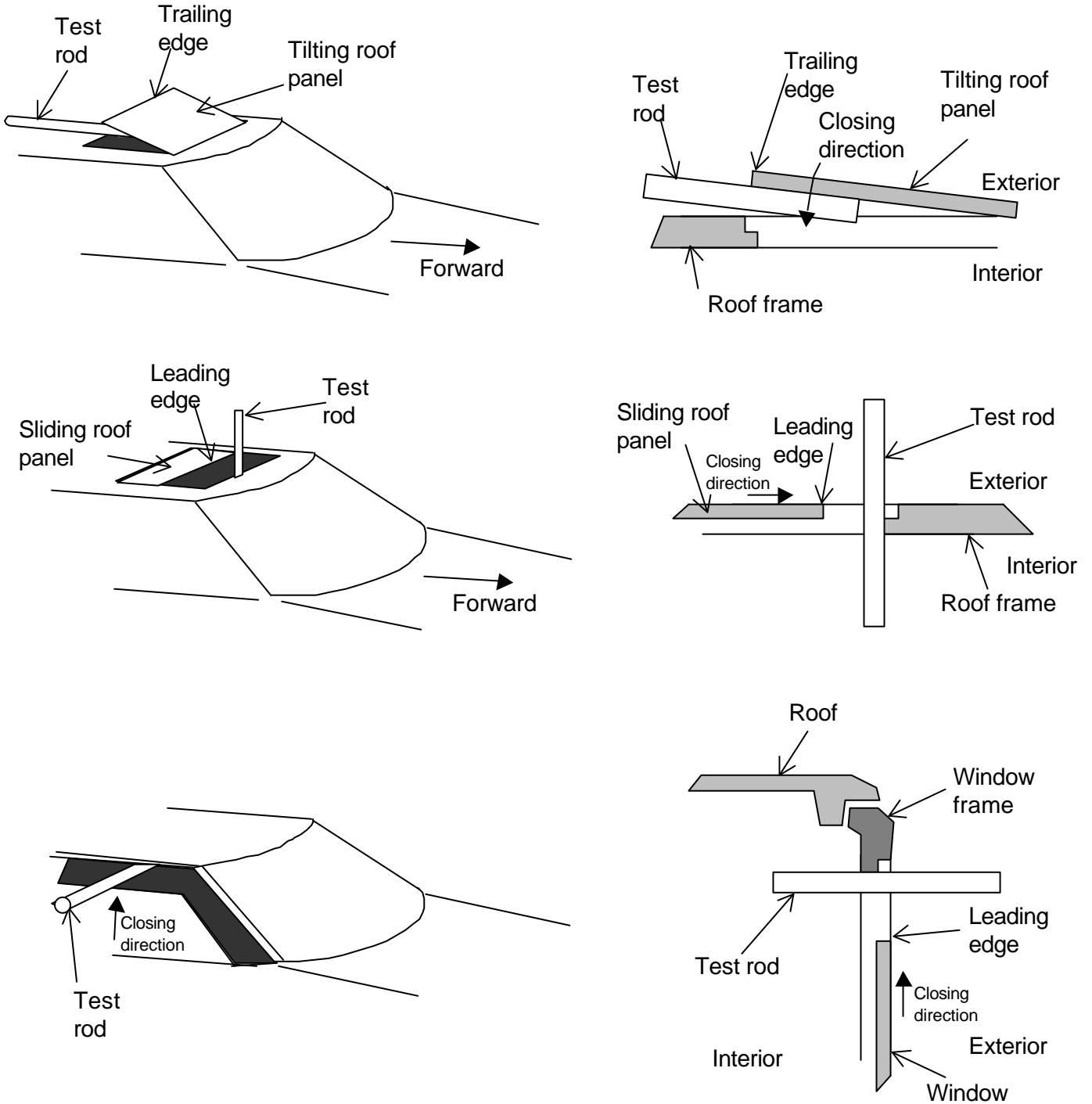


FIGURE 1

EXAMPLES OF SYMBOLS FOR DRIVER CONTROLLED SWITCH

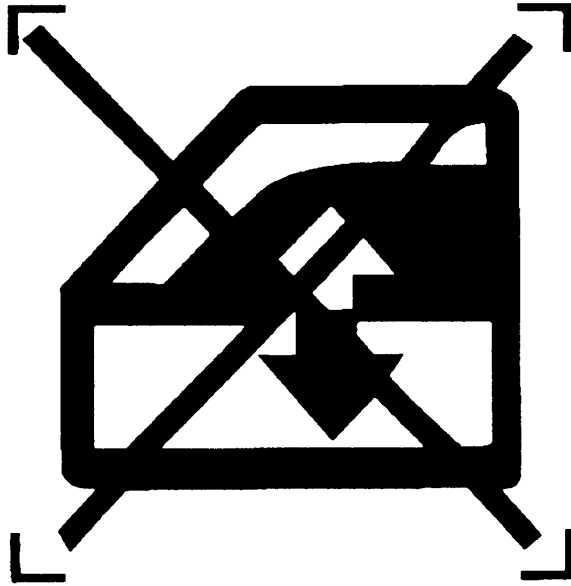


FIGURE 2



FIGURE 3
(ISO 2575:1998)

II. RESPECTIVE ARTICLES OF DIRECTIVE 2000/4/EC

- 2.13. "Opening" is the maximum unobstructed aperture between the upper edge or the leading edge, depending on the closing direction, of a power-operated window or partition or roof panel and the vehicle structure which forms the boundary of the window, partition or roof panel, when viewed from the interior of the vehicle or, in the case of partition system, from the rear part of the passenger compartment.

To measure an opening, a cylindrical test rod shall (without exerting force) be placed through it normally perpendicular to the window, roof panel or partition as shown in Figure 1, from the interior of the vehicle or, as applicable, from the rear part of passenger compartment.

5.8. Power-operated windows, roof-panel systems and partition systems

- 5.8.1. The requirements below apply to power-operated windows/roof-panel systems/partition systems to minimize the possibility of injuries caused by accidental or improper operation.

5.8.2. Normal operating requirements

Except as provided in Item 5.8.3, power-operated windows/roof-panel systems/partition systems may be closed under one or more of the following conditions:

- 5.8.2.1. when the ignition key is inserted in the ignition control in any position of use;
- 5.8.2.2. by muscular force unassisted by power supply of the vehicle;
- 5.8.2.3. on continuous activation by a locking system on the outside of the vehicle;
- 5.8.2.4. during the interval of time between the moment the ignition has been switched from "on" to "off" and/or the key has been removed and the moment that neither of the two front doors has been opened sufficiently to permit egress of occupants;
- 5.8.2.5. when the closing movement of a power-operated window, roof panel or partition starts at an opening not exceeding 4 mm;
- 5.8.2.6. when the power-operated window of a vehicle's door without an upper door frame closes automatically, whenever the pertinent door is closed. In this case the maximum opening, as defined in Item 2.13, prior to window closing, shall not exceed 12 mm.
- 5.8.2.7. Remote closing shall be allowed by continuous activation of a remote actuation device, provided one of the following conditions is fulfilled:
- 5.8.2.7.1. the remote actuation device shall be incapable of closing the power-operated window/roof panel/ partition from a distance of more than 11 metres from the vehicle;

- 5.8.2.7.2. the remote actuation device shall be incapable of closing the power-operated window/roof panel/ partition:
- if the actuation device and the vehicle are separated by an opaque surface and
 - if from the distance between the remote actuation device and the vehicle is more than 6 metres.
- 5.8.2.8. One-touch closing shall be permitted only for the power-operated window of the driver's door and the roof panel, and only during the time when the ignition key is in the engine running position.
- 5.8.3. Auto-reversing requirements
- 5.8.3.1. None of the requirements in Item 5.8.2 shall apply if a power-operated window/roof panel system/ partition is fitted with an auto-reversing device.
- 5.8.3.1.1. This device shall reverse the window/roof panel/partition before it exerts a pinch force of more than 100 N within the opening of 200 mm to 4 mm above the top edge of a power-operated window/partition or in front of the leading edge of a sliding roof panel and at the trailing edge of a tilting roof panel.
- 5.8.3.1.2. After such an auto-reversal, the window or roof panel or partition shall open to one of the following positions:
- 5.8.3.1.2.1. a position that permits a semi-rigid cylindrical rod of a diameter of 200 mm to be placed through the opening at the same contact point(s) used to determine the reversing behaviour in Item 5.8.3.1.1;
- 5.8.3.1.2.2. a position that represents at least the initial position before closing was initiated;
- 5.8.3.1.2.3. a position at least 50 mm more open than the position at the time when reversing was initiated;
- 5.8.3.1.2.4. in the case of tilting motion of a roof panel, the maximum angular opening.
- 5.8.3.1.3. To check power-operated windows/roof-panel systems/partition systems with reversing devices, a measuring instrument/test rod shall be placed through the opening from the inside of the vehicle or, in the case of a partition system, from the rear part of the passenger compartment in such a way that the cylindrical surface of the rod contacts any part of the vehicle structure which forms the boundary of the window/roof-panel aperture/partition. The force deflection ratio of the measuring instrument shall be not more than 10 N/mm. The position of the test rods (normally located perpendicular to the window/roof panel/-partition) are illustrated in Appendix 3, Figure 1.
- 5.8.4. Switch location and operation
- 5.8.4.1. Switches of power-operated windows/roof panels/partitions shall be located or operated in such a way to minimize the risk of accidental closing. The switches shall require continuous actuation for closing except in the case of Items 5.8.2.6, 5.8.2.8 or 5.8.3.

- 5.8.4.2. All rear-window, roof-panel and partition switches intended for use by occupants in the rear of the vehicle shall be capable of being switched off by a driver-controlled switch which is located forward of a vertical transverse plane passing through the R points of the front seats. The driver controlled switch is not required if a rear window, roof panel or partition is equipped with an auto-reversing device. If, however, the driver-controlled switch is present, it shall not be able to override the auto-reversing device.

The driver-controlled switch shall be located so as to minimize any accidental manipulating. It shall be identified by the symbol shown in Appendix 4.

5.8.5. Protection devices

All protection devices which are used to prevent damage to the power source in the case of an overload or stalling shall be capable of resetting automatically while the switch controlling the window/roof panel/partition is activated.

5.8.6. Handbook instructions

- 5.8.6.1. The owner's manual of the vehicle shall contain clear instructions relating to the power-operated window/roof panel/partition, including:

5.8.6.1.1. explanation of possible consequences (entrapment),

5.8.6.1.2. use of the driver-controlled switch,

5.8.6.1.3. a "WARNING" message indicating the dangers, particularly to children in the case of improper use/activation of the power-operated windows/roof-panel systems/partition systems. This information should indicate the responsibilities of the driver, including instructions for other occupants and the recommendation to leave the vehicle only if the key is removed from the ignition lock,

5.8.6.1.4. a "WARNING" message indicating that special care should be taken when using remote closing systems (see Item 5.8.2.7), for example to actuate it only when the operator has a clear view of the vehicle to be sure that nobody can be trapped by power-operated windows/roof-panel partition equipment.

POSITION OF CYLINDRICAL TEST ROD IN THE OPENING ROOF AND WINDOW OPENINGS

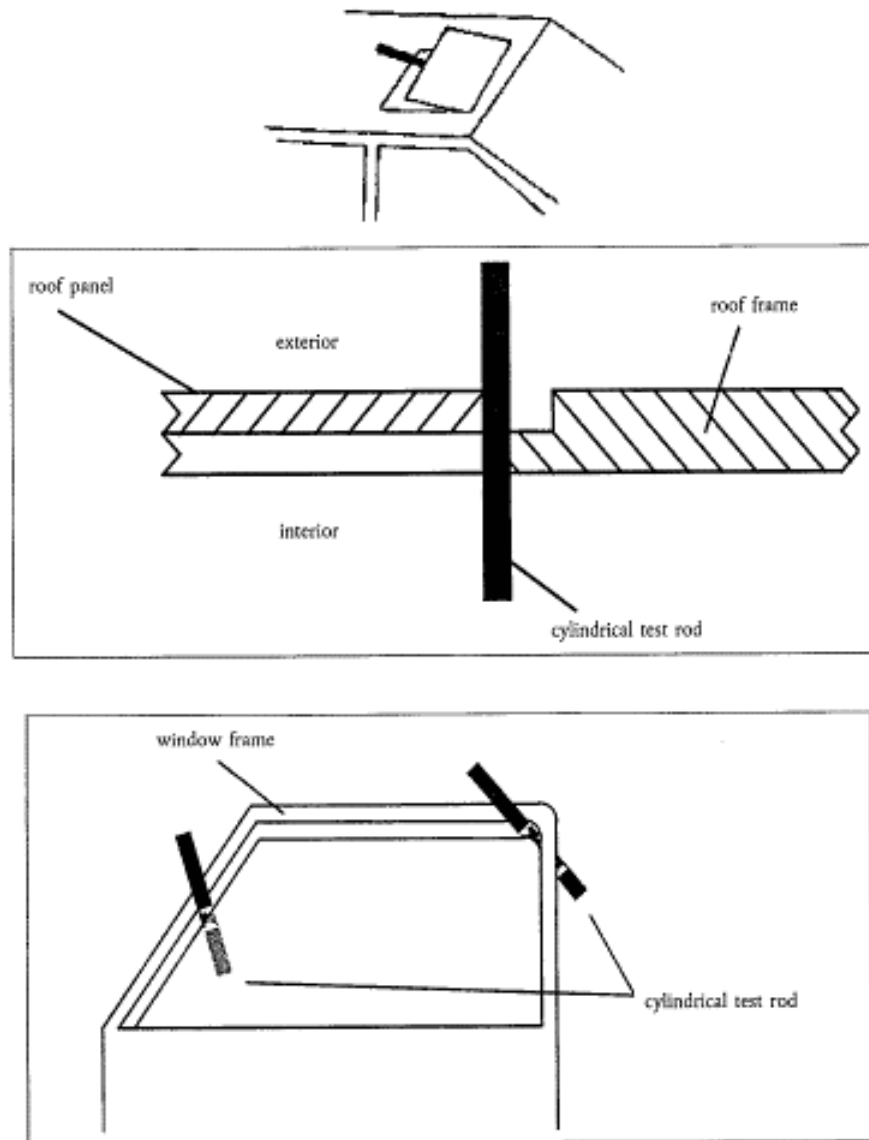


Figure 1

Appendix 4

SYMBOL FOR DRIVER CONTROLLED SWITCH



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