

Air-conditioning Pressure Switch

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KES

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1. Purpose

This standard aims at securing proper quality by standardizing specifications.

Remark: This standard and a drawing communicate together our requirements.

2. Scope of Application

This standard specifies the air-conditioning pressure switch for automobiles (hereinafter referred to as the pressure switch).

3. Report of Evaluation Result

The quality evaluation results at each stage from development to mass production shall be submitted to Kia according to the Appendix.

4. Meaning of Terminology**(1) Rated voltage**

12 V for 12 V system pressure switch of 24 V for 24 V system one

(2) In-car-mounted condition

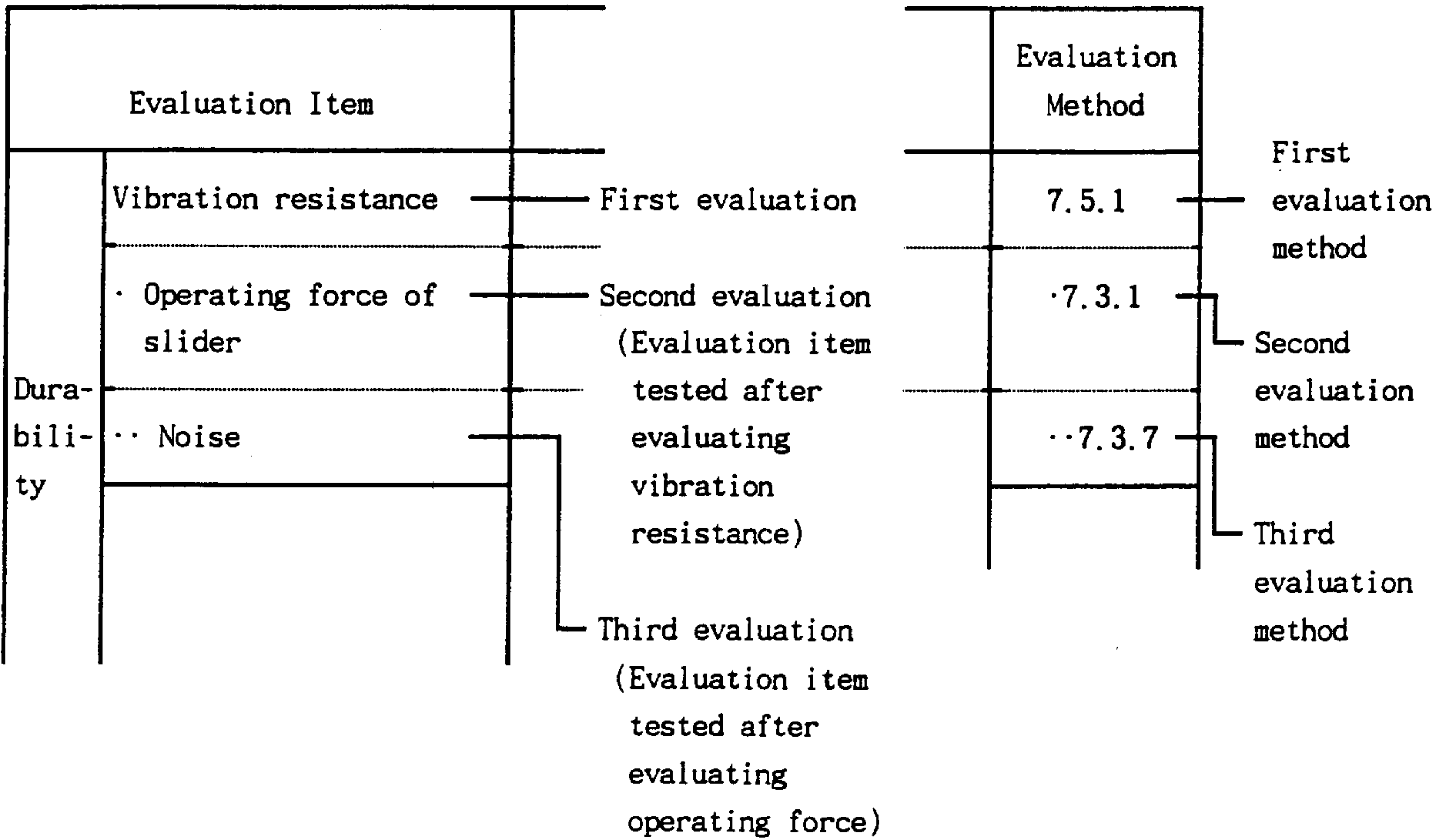
Condition that the testing sample is mounted onto the rigid testing equipment by the fixture in the same style as it is mounted onto the car.

5. Specification Indicated in Drawings**(1) Operating pressure****(2) Tolerance of operating pressure****(3) Rated voltage****(4) Rated current****(5) Electric load****(6) Fuse capacity****(7) In-car-mounted condition****(8) Visibility of the pressure switch when it is mounted onto a vehicle**

6. Evaluation Standard

The evaluation standard of the pressure switch shall conform to Table 2.

Remark 1. The way of reading evaluation items and methods in Table 2 shall conform to the following example.



Remark 2. The definition of the quality rank shall conform to Table 1. (Based on KMS Q410001)

Table 1

Rank	Definition
A	When defects below occur on final products, or vehicles, the quality rank invested for each quality characteristic causing defects shall be A rank. Defective phenomena of A rank: ① Defects that directly of indirectly injure human by the occurrence of troubles. ② Defects that have directly of indirectly fear of causing accidents of crashes or fires by the occurrence of troubles.
AR	When defective phenomena on final products, or vehicles, are the defects offending laws and regulations on safety, environmental pollution, etc., the quality rank invested for each quality characteristic causing defects shall be AR rank..
B	When defetive phenomena on final products, or vehicles, are the defects remarkably degrading the maketability quality and heavily harming the image of Kia, the quality rank invested for each quality characteristec causing defects shal be B rank.
C	Other quality characteristic than A, AR and B above.

Table 2

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Performance	Operating pressure	Designated in the drawing	B	7.2.1
	Responsiveness	Within 2 sec.	C	7.2.2
	Vibration performance	No chattering on the contact point for 5 msec or more.	B	7.2.3
Strength	Airtightness	Free from gas leak	B	7.3.1
	Pressure resistance	Free from any deformation or breakage.	A	7.3.2(1)
				7.3.2(2)
	• Operating pressure	To be same as the initial period value of the operating pressure before pressure resistance evaluation.	B	• 7.2.1
	• Airtightness	Free from gas leak.	B	• 7.3.1
	Lead wire strength	Free from any breakage, loose fitting or solder separation.	C	7.3.3
Electric requirements	Contact point voltage drop	Maximum 0.2 V	C	7.4.1
	Insulation resistance	Minimum 1M Ω	C	7.4.2
	Dielectric strength	Free from leakage current.	C	7.4.3
	Abnormal voltage resistance (A)	Free from ignition or 1 or more cigarette smoking	A	7.4.4
	• Operating pressure	Designated in the drawing.	B	• 7.2.1
	• Responsiveness	Within 2 sec.	C	• 7.2.2
	• Contact point voltage drop	Maximum 0.2 V	C	• 7.4.1
	• Insulation resistance	Minimum 1M Ω	C	• 7.4.2

Table 2 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Electric requirements	Abnormal voltage resistance (B)	Free from ignition or 1 or more cigarette smoking.	A	7.4.5
	Abnormal current resistance	Free from ignition or 1 or more Cigarette smoking	A	7.4.6
	Contact point temperature rise	Maximum 65°C relative to the breakage or loose fitting.	C	7.4.7
Durability	Vibration durability	Free from any deformation, breakage or loose fitting.	B	7.5.1
	• Operating pressure	Operating pressure shall be less than $\pm 10\%$ of the tolerance designated in the drawing.	B	• 7.2.1
	• Airtightness	Free from gas leak.	B	• 7.3.1
	• Contact point voltage drop	Maximum 0.2 V	C	• 7.4.1
	Operating durability (Pressure cycles)	Free from any deformation or breakage.	B	7.5.2
	• Operating pressure	Operating pressure shall be less than $\pm 10\%$ of the tolerance designated in the drawing.	B	• 7.2.1
	• Responsiveness	• Within 3 sec. • No chattering for 5 msec or more.	C	• 7.2.2
	• Airtightness	Free from gas leak.	B	• 7.3.1
	• Contact point voltage drop	Maximum 0.25V	C	• 7.4.1
Environmental resistance	Heat resistance	Free from any deformation, denaturalizing or breakage.	C	7.6.1
	• Operating pressure	Operating pressure shall be less than $\pm 10\%$ of the tolerance designated in the drawing.	B	• 7.2.1
	• Responsiveness	Within 2 sec.	C	• 7.2.2
	• Airtightness	Free from gas leak.	B	• 7.3.1
	• Contact point voltage drop	Maximum 0.2 V	C	• 7.4.1

Table 2 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	Cold resistance	Free from any deformation, denaturalizing or breakage.	C	7.6.2
	• Operating pressure	Operating pressure shall be less than $\pm 10\%$ of the tolerance designated in the drawing.	B	• 7.2.1
	• Responsiveness	Within 2 sec.	C	• 7.2.2
	• Airtightness	Free from gas leak.	B	• 7.3.1
	• Contact point voltage drop	Maximum 0.2 V	C	• 7.4.1
	Thermal shock resistance	Free from any deformation, denaturalizing or breakage.	C	7.6.3
	• Operating pressure	Operating pressure shall be less than $\pm 10\%$ of the tolerance designated in the drawing.	B	• 7.2.1
	• Responsiveness	Within 2 sec.	C	• 7.2.2
	• Airtightness	Free from gas leak.	B	• 7.3.1
	• Contact point voltage drop	Maximum 0.2 V	C	• 7.4.1
	Corrosion resistance	Corrosion and the paint blister are permitted only within 2 mm width at the edge, welding, joint and the rubber bonding area. Neither rust nor the paint blister to be permitted in any other area.	C	7.6.4
	• Airtightness	Free from gas leak.	B	• 7.3.1
	• Pressure resistance	Free from any deformation or breakage.	A	• 7.3.2 (1) • 7.3.2 (2)
	Moisture resistance			7.6.5
	• Operating pressure	Operating pressure shall be less than $\pm 10\%$ of the tolerance designated in the drawing.	B	• 7.2.1
	• Responsiveness	Within 2 sec.	C	• 7.2.2

Table 2 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	• Contact point voltage drop	Maximum 0.2 V	C	• 7.4.1
	• Insulation resistance	Minimum 1M Ω	C	• 7.4.2
	• Dielectric Strength	Free from leakage current.	C	• 7.4.3
	Dust resistance, dustproof			7.6.6
	• Contact point voltage drop	Maximum 0.2 V	C	• 7.4.1
	• Insulation resistance	Minimum 1M Ω	C	• 7.4.2
	• Dielectric strength	Free from leakage current.	C	• 7.4.3
External appearance	Flaw, crack, rust and defacing	To be free from any flaw, crack, rust and defacing.	C	Visual
	Production record	Any one of production No., lot No., or production date shall be noted.	C	Visual

7. Evaluation method

7.1 Common evaluation conditions

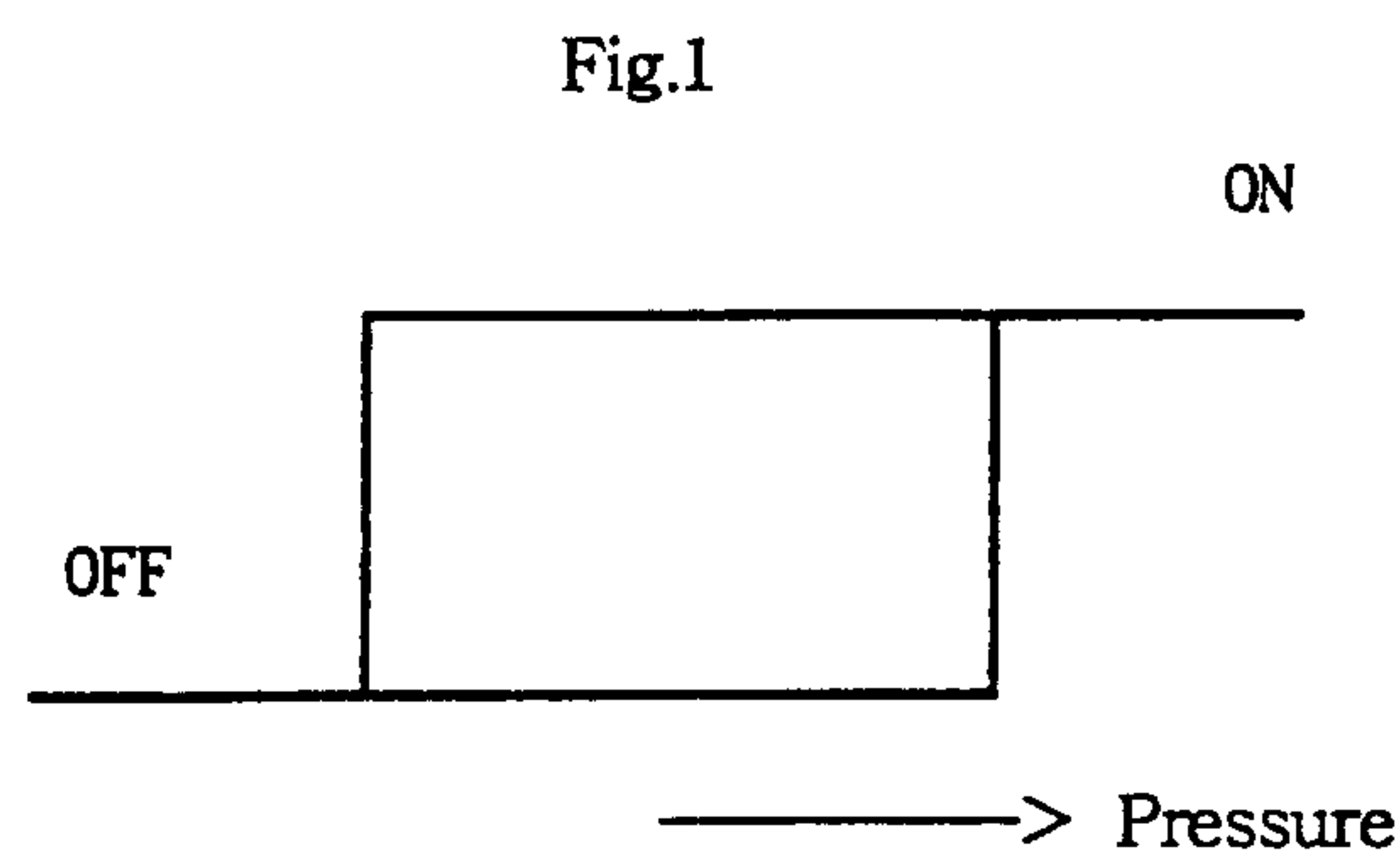
7.1.1 Standard atmospheric conditions for testing

Unless otherwise specified, the standard atmospheric condition for testing shall be the normal temperature and normal humidity that is grade 15 of 20°C (20 ± 15°C) and grade 20 of 65% (65 ± 20%) respectively specified in KS A 0006.

7.2 Performance

7.2.1 Operating pressure

The operating pressure at which the contact point is switched ON and OFF as shown in Fig. 1 shall be measured by increasing or decreasing the pressure.



7.2.2 Responsiveness

The pressure shall be increased and decreased by 1.0 kgf/cm^2 { KPa}. When the operating pressure designated in the drawing is reached, the contact point shall be reversed from OFF and ON or ON to OFF. The time for reversing the contact point shall be measured.

7.2.3 Vibration performance

The chattering on the contact point shall be evaluated by varying the vibration frequency range shown in Fig. 2 at the steady rate continuously under the same as in car-mounted condition and according to Table 3.

Table 3

Item	Condition
Cycle (One trip)	20 minutes or less
Vibration direction	Operating direction of contact point
Supply voltage	Rated voltage
Load	Designated in the drawing
Applied pressure	High pressure side use: 15 kgf/cm^2 {1.5 MPa} Low pressure side use: 2.5 kgf/cm^2 {0.25 MPa}