



Air Bag Sensor

KES D-C225

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Contents

1. Purpose
2. Scope of Application
3. Report of Evaluation Result
4. Definition of Terminology
5. Specifications Indicated in Drawing
6. Evaluation Standard
7. Evaluation Method
8. Alteration of Specification
9. Indication Method on Drawing
10. Quoted Standard

Appendix

Remark



1. Purpose

This standard aims at securing proper quality by standardizing specifications.

Remark : This standard and the specification drawing communicate together Kia's requirements.

2. Scope of Application

This standard specifies the air bag sensor for automobiles(hereinafter referred to as "sensor") .

3. Report of Evaluation Result

Quality evaluation result at each stage from development to mass production shall be submitted to KIA according to the Appendix.

4. Definition of Terminology

(1) Air bag sensor

Sensor sensing the velocity change at a vehicle clash and operating air bag equipments to protect a driver.

(2) Meaning of symbol for sensor

- ① SF : Safety sensor of front
- ② SR : Safety sensor of rear
- ③ DR : Discriminating sensor of right hand
- ④ DL : Discriminating sensor of left hand
- ⑤ DC : Discriminating sensor of center

(3) The coordinate axes of sensor

The coordinate axes of sensor are defined as shown in Fig. 1. But, these coordinate axes do not coincide with those of vehicles.

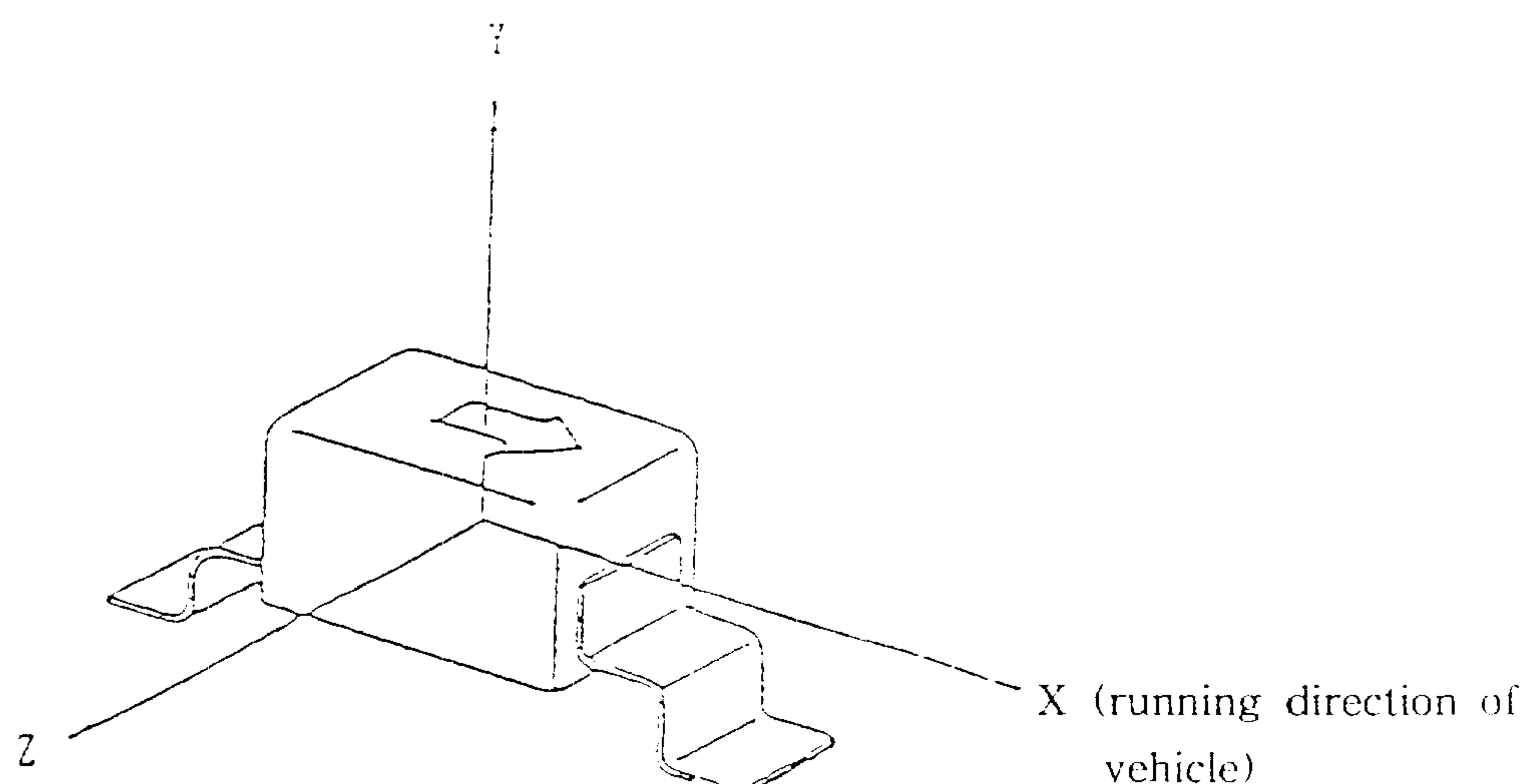


Fig. 1

(4) Haversine input acceleration

The formula of acceleration $G(t)$ is as follows :

$$G(t) = \begin{cases} \frac{\Delta V}{d} \left(1 - \cos \frac{2\pi}{d} t\right) & (0 \leq t < d) \\ 0 & (t \geq d) \end{cases}$$

Haversine acceleration is determined by two parameters of ΔV and d . ΔV and d mean the velocity change by haversine wave and duration time respectively.

5. Specifications Indicated in Drawings

- (1) External shape
- (2) Specifications of harness and connector
- (3) Electric circuit of sensor inside (resistance between terminal and others)
- (4) Characteristic curve of sensor sensitivity (as to haversine wave input acceleration)
 - *1. These curve for a actual sensor is scattered by accuracy of machine work, atmospheric temperature and other factors (gray area), but the characteristic curve of sensor sensitivity indicated on drawings is not scattered.
 - *2. Suppliers (sensor manufacturers) shall submit the gray area to Kia for approval, whose guaranteed area is narrowest and includes characteristic curve in the drawing in the middle of the area. Then, suppliers shall perform the test of 7.2.1 sensor sensitivity by using the gray area.
 - *3. Suppliers shall submit the evaluation standard of sensor sensitivity (the lower and upper limit value in Fig. 3 and 4, and the lower limit value in Fig. 5) to the Engineering Department of Kia for approval. Then, the suppliers shall perform the test of 7.2.1 sensor sensitivity by using the standard.
- (5) Evaluation standard of sensor sensitivity (the lower and upper limit value in Fig. 3 and 4, the lower limit value in Fig. 5)
- (6) Fixed torque of the sensor

6. Evaluation Standard

The evaluation standard of a sensor shall conform to Table 1.

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

Evaluation Item		Evaluation Method	
Dura-bility	Vibration resistance	First evaluation	7.5.1 First evaluation method
	• Operating force of slider	Second evaluation (Evaluation item tested after vibration evaluation)	• 7.3.1 Second evaluation method
	•• Noise ••	Third evaluation (Evaluation item tested after evaluation of operation force)	•• 7.3.7 Third evaluation method

Remark 2. Quality ranks shall be represented by A, AR, B or C.
Definition shall conform to KMS Q410001(Determination and Procedure of Quality Ranking)

Table. 1

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Snythetic performance I	Electric performance (Applied only to SR)	(1) Resistance between every termial shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	7.2.2
	· Current load	—	B	· 7.2.4
	·· Sensor sensitivity (TTP)	The allowable standard in Table 3 shall be satisfied	A	·· 7.2.1
	··· Harness slip-out strength	No slip out and disconnection	B	··· 7.3.1
	···· Sensor sensitivity (STP)	The allowable standard in Table 3 shall be satisfied	A	···· 7.2.1
	···· Mechanical strength	Permanent set shall be 30mm or less	B	···· 7.3.2
	···· Sensor sensitivity (TTP)	The allowable standard in Table 3 shall be satisfied	A	···· 7.2.1
	···· Electric resistance	(1) Resistance between every termial shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	···· 7.2.2
Snythetic performance II	···· Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	···· 7.2.3
	Electric performance (Applied only to SR)	(1) Resistance between every termial shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	7.2.2
	· Current load	—	B	· 7.2.4
	·· Sensor sensitivity (TTP)	The allowable standard in Table 3 shall be satisfied	A	·· 7.2.1
	··· High temperature resistance	—	A	··· 7.5.1

Table. 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Synthetic performance II	Sensor sensitivity (STP)	The allowable standard in Table 3 shall be satisfied	A	7.2.1
	Electric resistance	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	7.2.2
	Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	7.2.3
	Low temperature resistance	——	A	7.5.2
	Sensor sensitivity (STP)	The allowable standard in Table 3 shall be satisfied	A	7.2.1
	Electric resistance	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	7.2.2
	Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	7.2.3
	Thermal shock resistance	——	A	7.5.3
	Sensor sensitivity (STP)	The allowable standard in Table 3 shall be satisfied	A	7.2.1
	Electric resistance	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	7.2.2
	Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	7.2.3
	Drop test durability	——	A	7.5.3
	Sensor sensitivity (STP)	The allowable standard in Table 3 shall be satisfied	A	7.2.1

Table. 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Synthetic performance II	Electric resistance	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	 7.2.2
	Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	 7.2.3
	• Saltwater spray resistance	——	A	 7.5.6
	•• Sensor sensitivity (TTP)	The allowable standard in Table 3 shall be satisfied	A	 7.2.1
	Electric resistance	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	 7.2.2
	Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	 7.2.3
Synthetic performance III	Electric resistance (Applied only to SR)	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	7.2.2
	Current load	——	B	7.2.4
	Sensor sensitivity (TTP)	The allowable standard in Table 3 shall be satisfied	A	7.2.1
	Vibration resistance	——	A	7.5.4
	Sensor sensitivity (STP)	The allowable standard in Table 3 shall be satisfied	A	7.2.1
	Electric resistance	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	7.2.2

Table. 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Synthetic performance III	····Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	····7.2.3
	Drop test durability	—	A	····7.5.5
	··Sensor sensitivity (STP)	The allowable standard in Table 3 shall be satisfied	A	····7.2.1
	····Electric resistance	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	····7.2.2
	Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	····7.2.3
	Saltwater spray resistance	Standard in Appendix Table 2 of KES B-R001 shall be satisfied	A	····7.5.6
	Sensor sensitivity (TTP)	The allowable standard in Table 3 shall be satisfied	A	····7.2.1
	····Electric resistance	(1) Resistance between every terminal shall be the value indicated in a drawing (2) Insulation resistance between each insulated terminal shall be 5 MΩ or more.	A	····7.2.2
	····Contact resistance	It shall be 150 MΩ or less in 85% or more of duration the contact time	A	····7.2.3
	Crack	It shall be within the standard of the minimum allowable sample	A	Visually
Appearance	Deformation			
	Looseness and slip-out of terminal			