

Air Bag Module



KES D-C220

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Remark



1. Purpose

This standard aims at securing proper quality by standardizing specifications.

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

2. Scope of Application

This standard specifies the air bag module assembly(hereinafter referred to as module assembly) on a driver's seat for automobiles.

3. Report of Evaluation Result

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

4. Definition of Terminology

(1) Module assembly

The unit of the air bag protection system composed of the bag assembly protecting a driver, inflator generating gas which inflates a bag, retainer to hold them, and bag cover having and holding the bag.

(2) Strap

The strap of a bag assembly deploying inside a bag to support the shape of an inflated bag.

(3) Deployment

The bag is inflated by working the inflator.

(4) Gas vent hole

A hole provided on the bag to improve the impact absorption capacity of a bag.

(5) Igniter

Igniter working an inflator.

(6) Bridge wire

Heating line in an igniter that operates the igniter by applying electric current.

(7) Retainer ring

Ring used to fix tight the bag between a retainer ring and retainer to keep the air-tightness of a bag and retainer.

(8) Inflator

A device generating gas to inflate a bag.

(9) Bag assembly

Assembly of module assembly which deploys and touches a driver at the operation of the system to protect the driver.

(10) Retainer assembly

Assembly of the module assembly which holds together bag assembly, bag cover and the inflator and makes the attaching parts to a vehicle.

(11) Bag cover

Cover of a module protecting bag and others. In operating the module assembly, the bag cover is opened by pressure of the bag assembly to deploy the bag.

5. Specifications Indicated in Drawings

(1) Shape of bag cover

(2) Attaching method to a vehicle, shape of attaching parts and the tightening torque in using a screw.

(3) Inflator in use(manufacturer, type and power properties)

(4) Igniter in use(manufacturer and type).

(5) The shape and volume of a bag.

(6) The diameter, number and position of the gas vent hole, the minimum sewing diameter around the gas vent hole.

(7) The length, number and position of straps.

(8) The attaching position and angle of the module assembly to a vehicle.

(9) The position relation between the module assembly and the datum point of seats.

(10) The evaluation standard of electric resistance(sometimes it is not indicated).

(11) Parts where the attaching part to a vehicle and adhesiveness of mating parts are important in appearance.

(12) The necessity of evaluating the clearance end and surface wrinkles of a module assembly and measuring positions when testing the short-term heat resistance at a high temperature.

(13) The necessity of evaluating the clearance end and surface wrinkles of a module assembly and measuring position when testing the cold resistance at a low temperature.

(14) Material, thickness of plate and fixing method of a holder.

(15) Vibration direction of a fixing table(TL, BL, WL).

6. Evaluation Standard

The evaluation standard of the module assembly 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	
Durability	Vibration resistance	First evaluation	7.5.1 First Evaluation Method
	• Operating force of slider	Second evaluation (Evaluation item tested after evaluating the vibration resistance)	• 7.3.1 Second Evaluation Method
	•• Noise	Third evaluation (Evaluation item tested after evaluating the operating force)	•• 7.3.7 Third Evaluation Method

Remark 2. The quality rank shall be represented by A, AR, B or C.
The definitions shall conform to KMS Q410001(Determination and procedure of Quality Ranking).

Table 1. Module Assembly

Evaluation Method		Evaluation Standard		Quality Rank	Evaluation Method	
Basic performance	Amount of scattered particle	The fragments of a bag cover scattered by deploying the bag shall not exceed the values in every area shown in the following table. But, metal fragments, in every area, shall not be scattered.		A	7.2.4	
		Unit: mg				
		Area (See Fig.4)	Total weight of particle			Mass of the largest particle
		A: near the eye	5.0			0.5
		B: near the face	50			10.0
		C: others	5000			1000

Table 1. Module Assembly (Continued)

Evaluation Method		Evaluation Standard	Quality Rank	Evaluation Method
Basic performance	Electric resistance	(1) Electric resistance between every terminal shall satisfy the standard indicated in a drawing (2) When the standard is not specified in a drawing, the electric resistance shall be within the range shown below 1. Ignition circuit(circuit having bridg wire) $1 \pm 0.15 \Omega$ 2. Circuit between the shortened ignition circuit and the inflator (earth terminal) minimum $200k \Omega$	A	7.2.6
	Heat resistance	(1) No flaw, crack or deformation on the module assembly after testing 7.3.1 (2) But, deformation approved by Kia shall be allowed	A	7.3.1
	Looseness of screws	(1) No looseness nor damage in a revet (2) No rotation of a screw (including fixed screws to mating parts) (3) The tightening torque shall be 40% or more of the minimum value indicated in the drawing, and also be $2N \cdot m$ or more	B	7.2.5
	Deployment performance at normal temperature	(1) The internal pressure of a bag shall exceed the atmospheric pressure within 50ms and then shall keep on being than the atmospheric pressure 10ms or more(See Fig.1) When deploying, no damage in a bag and strap, nor scattering of a cover (2) But, scattering whose size is approved by Kia shall be allowed (3) No fusion of material by gas (4) When deploying, no crack nor remarkable deformation on the inflator, retainer and retainer ring	AR	7.2.1

Table 1. Module Assembly (Continued)

Evaluation Method		Evaluation Standard	Quality Rank	Evaluation Method
Heat Resistance	Heat resistance	(1) No Flaw, crack or deformation on the module assembly after testing 7.3.1 (2) But, deformation approved by Kia shall be allowed	A	7.3.1
	Looseness of screws	(1) No looseness nor damage in a revet (2) No rotation of a screw (including fixed screws to mating parts) (3) The tightening torque shall be 40% or more of the minimum value indicated in the drawing, and also be 2N · m or more	B	7.2.5
	Deployment performance at low temperature	(1) The internal pressure of a bag shall exceed the atmospheric pressure within 50ms and then shall keep on being higher than the atmospheric pressure of 10ms or more(See Fig.1) (2) When deploying, no damage in a bag and strap, nor scattering of a cover (3) But, scattering whose size is approved by Kia shall be allowed (4) No fusion of material by gas (5) When deploying, no crack nor remarkable deformation of the inflator, retainer and retainer ring	AR	7.2.2
	Heat resistance	(1) No Flaw, crack nor deformation on the module assembly after testing 7.3.1 (2) But, deformation approved by Kia shall be allowed	A	7.3.1
	Looseness of screws	(1) No looseness nor damage in a revet (2) No rotation of a screw (including fixed screws to connecting parts) (3) The tightening torque shall be 40% or more of the minimum value indicated in the drawing, and also be 2N · m or more	B	7.2.5
	Deployment performance at high temperature	(1) The internal pressure of a bag shall exceed the atmospheric pressure within 50ms and then shall keep on being higher than the atmospheric pressure of 10ms or more(See Fig.1)	AR	7.2.3

Table 1. Module Assembly (Continued)

Evaluation Method		Evaluation Standard	Quality Rank	Evaluation Method
Heat Resistance	..Deployment performance at high temperature	(2) When deploying, no damage in a bag and strap, nor scattering of a cover (3) But, scattering whose size is approved by Kia shall be allowed (4) No fusion of material by gas (5) When deploying, no crack nor remarkable deformation on the inflator, retainer and retainer ring	AR	..7.2.3
	Fire resistance	(1) When deploying, no break of a bag and strap nor scattering of a cover (2) No fusion of the material by gas (3) When deploying, no crack nor remarkable deformation on the inflator, retainer and retainer ring	A	7.3.3
Durability	Vibration resistance	No flaw, crack nor deformation after testing 7.4.1	A	7.4.1
	..Thermal shock resistance	No flaw, crack nor deformation on the module assembly after testing 7.3.2	A	..7.3.2
	..Looseness of screws	(1) No looseness nor damage in a revet (2) No rotation of a screw (including fixed screws to mating parts) (3) The tightening torque shall be 40% or more of the minimum value indicated in the drawing, and also be 2N · m or more	B	..7.2.5
	...Deployment performance at normal temperature	(1) The internal pressure of a bag shall exceed the atmospheric pressure within 50ms and then shall keep on being higher than the atmospheric pressure of 10ms or more(See Fig. 1) (2) When deploying, no damage in a bag and strap, nor scattering of a cover (3) But, scattering whose size is approved by Kia shall be allowed (4) No fusion of material by gas (5) When deploying, no crack nor remarkable deformation on the inflator, retainer and retainer ring	AR	...7.2.1

Table 1. Module Assembly (Continued)

Evaluation Method		Evaluation Standard	Quality Rank	Evaluation Method
Durability	Vibration resistance	No flaw, crack nor deformation after testing 7.4.1	A	7.4.1
	Thermal shock resistance	No flaw, crack nor deformation on the module assembly after testing 7.3.2	A	7.3.2
	Looseness of screws	(1) No looseness nor damage in a revet (2) No rotation of a screw (including fixed screws to connecting parts) (3) The tightening torque shall be 40% or more of the minimum value indicated in the drawing, and also be 2N · m or more	B	7.2.5
	Deployment performance at low temperature	(1) The internal pressure of a bag shall exceed the atmospheric pressure within 50ms and then shall keep on being higher than the atmospheric pressure of 10ms or more(See Fig.1) (2) When deploying, no damage in a bag and strap, nor scattering of a cover (3) But, scattering whose size is approved by Kia shall be allowed (4) No fusion of material by gas (5) When deploying, no crack nor remarkable deformation on the inflator, retainer and retainer ring	AR	7.2.3
	Vibration resistance	No flaw, crack nor deformation after testing 7.4.1	A	7.4.1
	Thermal shock resistance	No flaw, crack or deformation on the module assembly after testing 7.3.2	A	7.3.2
	Looseness of screws	(1) No looseness damage in a revet (2) No rotation of a screw (including fixed screws to mating parts) (3) The tightening torque shall be 40% or more of the minimum value indicated in the drawing, and also be 2N · m or more	B	7.2.5

Table 1. Module Assembly (Continued)

Evaluation Method		Evaluation Standard	Quality Rank	Evaluation Method
Durability	...Deployment performance at high temperature	(1) The internal pressure of a bag shall exceed the atmospheric pressure within 50ms and then shall keep on being higher than the atmospheric pressure of 10ms or more(See Fig.1) (2) When deploying, no damage in a bag and strap, nor scattering of a cover (3) But, scatter whose size is approved by Kia shall be allowed (4) No fusion of material by gas (5) When deploying, no crack nor remarkable deformation on the inflator, retainer and retainer ring	AR	...7.2.2
	Shock resistance	No crack and others after testing 7.3.2	A	7.4.2
	..Deployment performance at normal temperature	(1) The internal pressure of a bag shall exceed the atmospheric pressure within 50ms and then shall keep on being higher than the atmospheric pressure of 10ms or more(See Fig.1) (2) When deploying, no damage in a bag and strap, nor scattering of a cover (3) But, scattering whose size is approved by Kia shall be allowed (4) No fusion of material by gas (5) When deploying, no crack nor remarkable deformation on the inflator, retainer and retainer ring	AR	..7.2.1