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KES

Blower Unit

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Contents

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

Quoted Standard

Appendix

1. Scope of Application

This standard specifies the blower unit for automobiles.

2. Purpose

This standard aims at securing proper quality by standardizing specification.

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. Definition of Terminology

Airflow volume Q1 Airflow volume when inside/outside air exchange door is in FRESH condition

Airflow volume Q2 Airflow volume when inside/outside air exchange door is in REC condition

Airflow volume Q3 Air intake airflow volume mixed with inside/outside air

5. Specifications Indicated in Drawings

- (1) Airflow volume Q1, Q2, Q3
- (2) Static pressure $\Delta P1$ $\Delta P2$
- (3) Power consumption W1, W2
- (4) Operating force
- (5) Operating stroke(operating angle) L1 L2 L3 L4
- (6) Operating speed
- (7) Blower noise
- (8) Revolution unbalance
- (9) Vehicle fuze
- (10) Blower motor size
- (11) Fan size
- (12) Control mode of blower (resister, power transistor)

6. Evaluation Standard

The evaluation standard of the blower unit 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 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

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Performance	Airflow volume	To be indicated in drawing	B	7.2.1
	Airflow volume of mixed inside air	To be indicated in drawing	C	7.2.2
	Air leak		B	7.2.3
	1. Inside · outside air exchange door part	a) Leakage airflow volume shall be $20\text{m}^3/\text{h}$ or less b) At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be $10\text{m}^3/\text{h}$ or less		
	2. Case joint	At a leakage air speed of 5m/s or less, leakage airflow volume shall be $10\text{m}^3/\text{h}$ or less		
	3. Sub door part	At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be $10\text{m}^3/\text{h}$ or less		
Performance	Operating force	To be indicated in drawing	B	7.2.4
	Operation feeling	No uncomfortable feeling during operation	C	7.2.5
	Operating stroke (operating angle)	To be indicated in drawing	C	7.2.6
	Door retaining force	No self-movement	C	7.2.7
	Operating noise	No noise	C	7.2.8
	Blower noise	To be indicated in drawing	B	7.2.9
	Revolution unbalance	To be indicated in drawing	C	7.2.10
Electrical characteristics	Insulation resistance	$1\text{M}\Omega$ or more	C	7.3.1
	Temperature rise	55°C max.	C	7.3.2
	Motor lock test	No ignition nor smoke equivalent to more than 1 cigarette from such surrounding parts as motor, motor case, fan or harness	A	7.3.3
	Charge voltage	3V (peak to peak) or less	C	7.3.4
	Abnormal voltage(A)	No ignition nor smoke equivalent to more than 1 cigarette from such surrounding parts as motor, motor case, fan or harness	A	7.3.5
	· Airflow volume	The power consumption in case of airflow volume Q1 shall be $+10\%$ -20% or more for initial value	B	· 7.2.1

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Electrical characteristics	• Blower noise	No noise	B	• 7.2.9
	• Insulation resistance	10k Ω or more	B	• 7.3.1
	Abnormal voltage(B)	No ignition nor smoke equivalent to more than 1 cigarette from such surrounding parts as motor, motor case, fan or harness	A	7.3.6
	Insulation resistance	0.5mA or less	C	7.3.1
	Protection characteristics during short	No ignition nor smoke equivalent to more than 1 cigarette in the from such surrounding parts as motor, motor case, fan or harness	A	7.3.8
Strength	Lead wire strength	No break, looseness nor coming-out.	B	7.4.1
	Strength of attachment part	1. After removing attachment part, no trouble such as deformation or break on attachment part. 2. No trouble such as deformation or break.	B	7.4.2
	Strength of link part	No deformation nor break in link, door or shaft	C	7.4.3
	Wire clamp strength	No displacement of out cable	C	7.4.4
	Fastener retaining strength	Y direction In case of A: No coming-off of a rod. In case of B: No coming-off of a fastener. Z direction No displacement of a rod.	C	7.4.5
	Coming-off force of wire connection ring part	1. Coming-off force shall be 5kg {49N} or more. 2. No coming-off at wire connection ring part.	C	7.4.6
Durability	Vibration durability	No break, deformation nor looseness on any part	B	7.5.1
	• Air leak			
	1. Inside • outside air exchange door part	a) Leakage airflow volume shall be 20m ³ /h or less. b) At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Dura- bility	2. Case joint	At a leakage air speed of 5m/s or less, leakage airflow volume shall be 10m ³ /h or less.	B	• 7.2.3
	3. Sub door part	At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	• Operating force	Change in operating force shall be $\pm 20\%$ or less for initial value.	C	• 7.2.4
	• Operating noise	No noise	B	• 7.2.8
	• Blower noise	No noise	B	• 7.2.9
	• Insulation resistance	10k Ω or more	C	• 7.3.1
	Working durability	No deformation, break on any part.	B	7.5.2
	• Operating force	Change in operating force shall be $\pm 20\%$ or less for initial value.	B	• 7.2.4
	• Operating noise	No noise	C	• 7.2.8
	Motor working durability	No deformation, break on any part	B	7.5.3
	• Insulation resistance	10k Ω or more.	C	• 7.3.1
	• Airflow volume	The power consumption in case of airflow volume Q1 shall be +10% -20% or more for initial value	B	• 7.2.1
	• Blower noise	No noise	B	• 7.2.9
Environ- mental resist- ance	Repeating cold-heat resistance	No deformation, break, or looseness on any part.	C	7.6.1
	• Air leak			
	1. Inside/outside air exchange door part	a) Leakage airflow volume shall be 20m ³ /h or less. b) At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.	B	• 7.2.3
	2. Case joint	At a leakage air speed of 5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	3. Sub door part	At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	• Operating force	Change in operating force shall be $\pm 20\%$ or less for initial value.	B	• 7.2.4
	• Operating noise	No noise	C	• 7.2.8
	• Blower noise	No noise	B	• 7.2.9
	• Insulation resistance	10k Ω or more	C	• 7.3.1
	Temperature cycle test	No deformation, break, or looseness on any part.	C	7.6.2
	• Air leak		B	• 7.2.3
	1. Inside • outside air exchange door part	a) Leakage airflow volume shall be 20m ³ /h or less. b) At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	2. Case joint	At a leakage air speed of 5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	3. Sub door part	At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	• Operating force	Change in operating force shall be $\pm 20\%$ or less for initial value.	B	• 7.2.4
	• Operating noise	No noise	C	• 7.2.8
	• Blower noise	No noise	B	• 7.2.9
	• Insulation resistance	10k Ω or more	C	• 7.2.1
	High temperature exposure resistance	No deformation, break, or looseness on any part.	C	7.6.3
	• Airflow volume	The power consumption in case of airflow volume Q1 shall be $\pm 10\%$ for initial value	B	• 7.2.1
	• Air leak		B	• 7.2.3
	1. Inside • outside air exchange door part	a) Leakage airflow volume shall be 20m ³ /h or less. b) At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	2. Case joint	At a leakage air speed of 5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	3. Sub door part	At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	• Operating force	Change in operating force shall be $\pm 20\%$ or less for initial value.	B	• 7.2.4
	• Operating noise	No noise	C	• 7.2.8
	• Blower noise	No noise	B	• 7.2.9
	• Insulation resistance	10k Ω or more	C	• 7.3.1
	Low temperature exposure resistance	No deformation, break, or looseness on any part.	C	7.6.4
	• Airflow volume	The power consumption in case of airflow volume Q1 shall be $\pm 10\%$ for initial value	B	• 7.2.1
	• Air leak		B	• 7.2.3
	1. Inside • outside air exchange door part	a) Leakage airflow volume shall be 20m ³ /h or less. b) At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	2. Case joint	At a leakage air speed of 2.5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	3. Sub door part	At a leakage air speed of 5m/s or less, leakage airflow volume shall be 10m ³ /h or less.		
	• Operating force	Change in operating force shall be $\pm 20\%$ or less for initial value.	B	• 7.2.4
	• Operating noise	No noise	C	• 7.2.8
	• Blower noise	No noise	B	• 7.2.9
	• Insulation resistance	10k Ω or more	C	• 7.3.1
	Humidity resistance		C	7.6.5
	• Insulation resistance	10k Ω or more	C	• 7.3.1
	Dustproofness, dust resistance	—	C	7.6.6
	• Airflow volume	The power consumption in case of airflow volume Q1 shall be $\pm 10\%$ more for initial value	B	• 7.2.1
	• Blower noise	No noise	B	• 7.2.9
	• Insulation resistance	10k Ω or more	C	• 7.3.1

7. Evaluation Method

7.1 Common evaluation condition

7.1.1 Standard atmospheric conditions for testing

Unless otherwise specified, the standard atmospheric condition shall be a standard temperature condition of 20℃, class 15(20±15℃) and a standard humidity condition of 65%, class 20(65±20%) specified in KS A 0006(Standard Atmospheric Conditions for Testing).

7.1.2 Type of test piece

Unless otherwise specified, test piece shall be assembled parts specified in the specification drawing.

7.1.3 Attachment condition of test piece

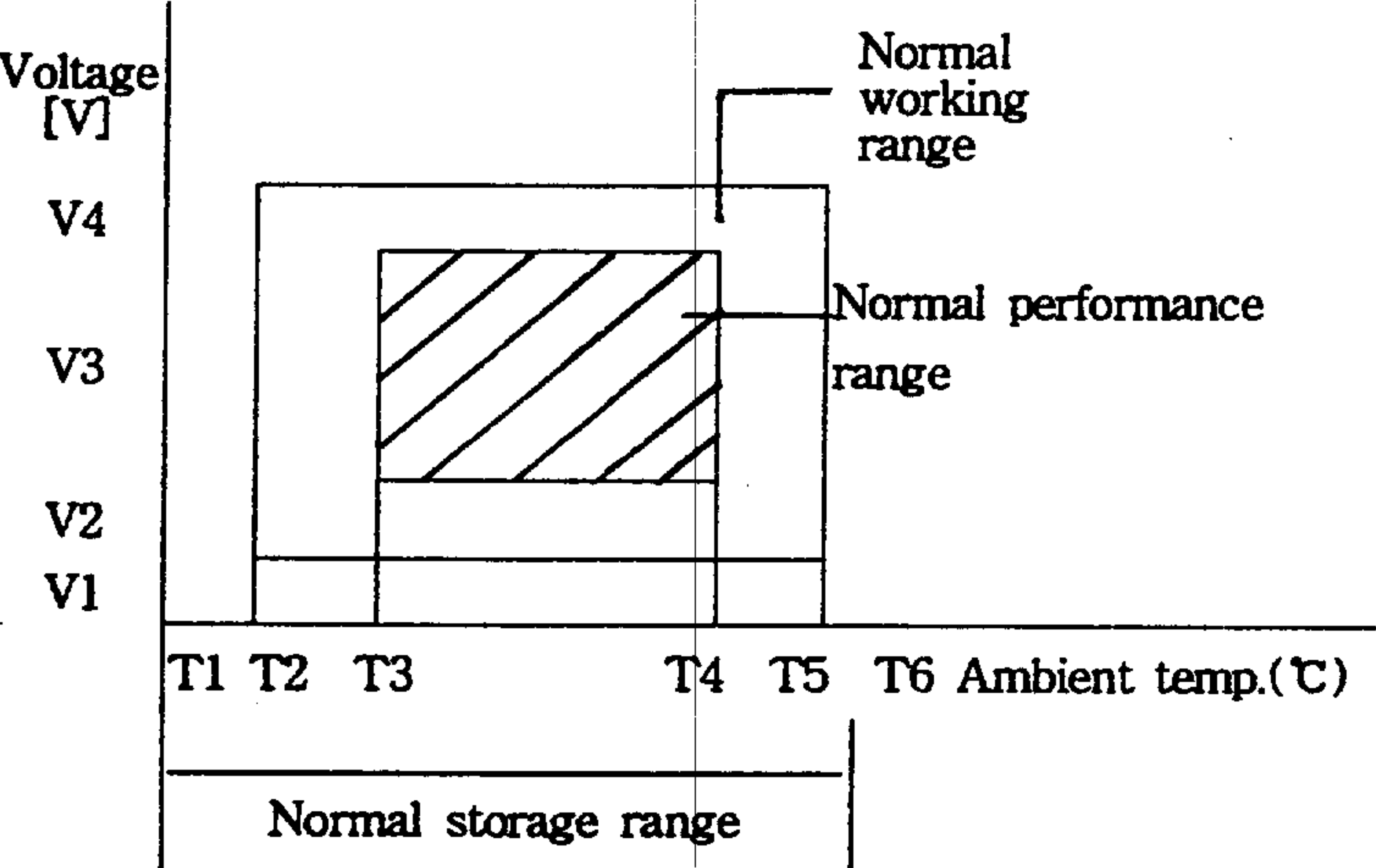
In case the vehicle attachment condition or equivalent is specified, the test piece shall be installed onto a sufficiently rigid testing stand in the vehicle condition.

7.1.4 Power source voltage

Unless otherwise specified, the applied voltage shall be rated voltage.

7.1.5 Guaranteed range

The normal range of storage, working and performance shall be as shown in Fig. 1. However, starting shall be possible within the normal working and performance range.



Voltage	12V system	12V system
V1	9V	18V
V2	10V	20V
V3=V4	15V	30V

Temp. T1=-40℃, T2=-40℃, T3=-20℃, T4=T5=70℃, T6=80℃

Fig. 1

7.1.6 Initial setting condition

The items designated as initial setting condition refer to what is set in the method described below.