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KES

Rear View Mirrors

KES D-C836

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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 rear view mirrors for automobiles (hereinafter referred to as the "mirror").

3. Report of Evaluation Results

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

Definition of Terminology

No items to be mentioned

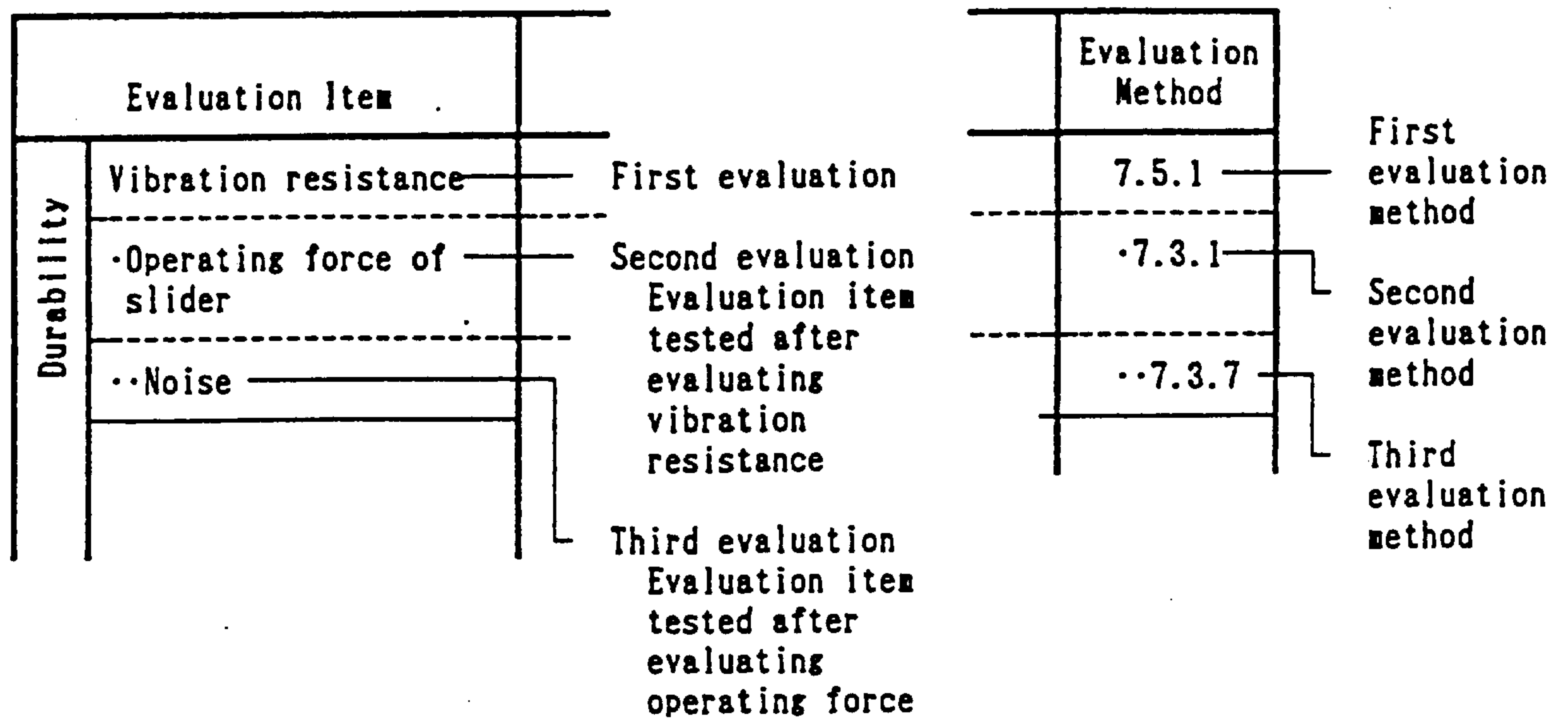
5. Specification Indicated in Drawings

- (1) Destination of the mirror and regulations applied
- (2) Mirror type (Selected from the outer mirror and the inner mirror)
- (3) Curvature of the mirror
- (4) Pivot torque
- (5) Rotating torque of the stay
- (6) Specification of vibration-proof rubber for the inner (room) mirror
- (7) Marginal acceleration of mirror face vibration, if required
- (8) Operating range of the mirror face
- (9) Changing angle of the prism mirror
- (10) Vertical operating range of operational durability of the pivot
- (11) Division and stage in KS R 1034

6. Evaluation Standard

The evaluation standard of the mirror shall conform to Table 1.

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



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

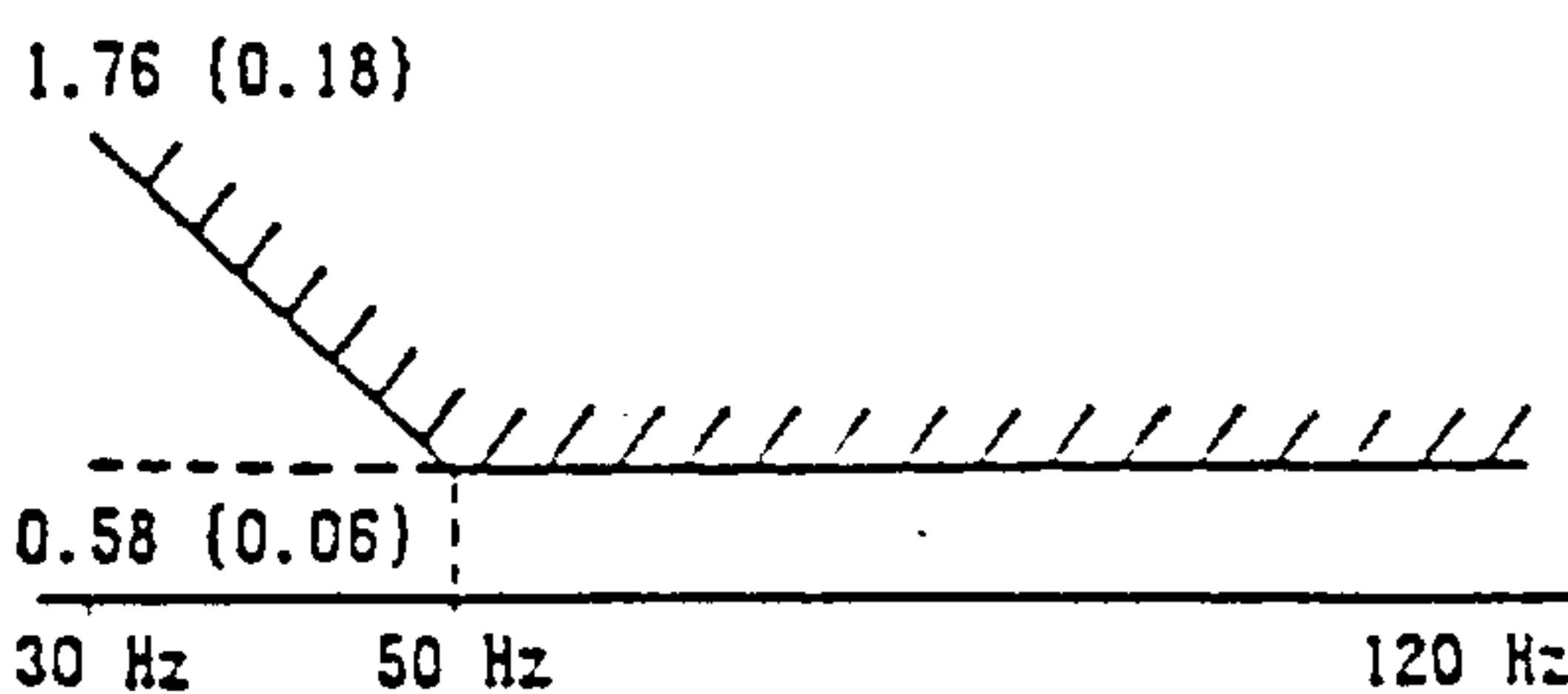
Evaluation Item			Evaluation Standard		Quality Rank	Evaluation Method
General performance	Performance of mirror face	Uniforming of mirror face	Curvature R mm	Standard value	B	—
			R = ∞ (Plane mirror)	Distortion: Max. 2%		KS R 5033
				Flatness: -0.015 - +0.035 mm		7.2.1
				Difference in length and width: Max. 0.025 mm		
				500 > R		Distortion: Max. 8%
			200 > R ≥ 500	Distortion: Max. 5%		
		Moisture resistance	To satisfy KS R 5033		A	7.2.2
		Thermal resisting property				
		Weatherability				
		Mirror face vibration		(1) The amplitude of the mirror face shall be 6.0 mm or less. (2) The marginal acceleration shall be within the area in the following figure. Unit: m/s ² {G }  (3) When the marginal acceleration is indicated in the drawing, it shall be preferential.		

Table 1 (Continued)

Evaluation Item			Evaluation Standard	Quality Rank	Evaluation Method
Performance of outer mirror	Mirror face hold fast capability	Pivot torque	(1) The manual and lever types shall satisfy the indicated value in the drawing. (2) For electric type. ① The manual torque shall satisfy the indicated value in the drawing. ② The electric torque shall be $6.9 \pm 2 \text{ N}\cdot\text{cm}$ ($0.7 \pm 0.2 \text{ kgf}\cdot\text{cm}$)	B	7.3.1
		Rotating torque of stay	To satisfy the indicated value in the drawing	B	7.3.2
	Operability	Operating force of lever	Max. 9.8 N (1 kgf)	B	7.3.3
		Operating range of mirror face	To satisfy the indicated value in the drawing	A	Visually
		Performance of electric mirror	Operating speed	B	7.3.4
			Operating current	B	7.3.5
			Operation noise	B	7.3.6
		Heater performance	Max. temp. of mirror face	B	7.3.7
			Reaching time to max. temp.	B	7.3.7
			Operating current	B	7.3.7
			Defrosting performance	B	7.3.7
		Looseness by operation	The looseness on the lever shall be within 2 mm.	B	7.3.8

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method	
Performance of outer mirror	Operability	Noise	No noise such as squeaking, clattering and chattering noise of the door mirror by operation, running and door closing	B	Aurally
	Performance of flexing mechanism	Flexing operating force	$49\text{ N}(5\text{ kgf}) \leq F \leq 69.6\text{ N}(7\text{ kgf})$	B	7.3.9
		Flexing durability	No breaking on every part of the flexing mechanism	B	7.3.10
		Rapid returnability	No breaking on every part of the flexing mechanism	B	7.3.11
	Environmental resistance	Short-term heat resistance	To satisfy HS-02, A2 and B2 in KES D-G008	B	KES D-G008
		Long-term heat resistance	To satisfy HQ-E, A2 and B2 in KES D-G008		
		Cold resistance	To satisfy CS-0L, A2 and B2 in KES D-G008		
		Thermal shock resistance	To satisfy Th-02, D, A2 and B2 in KES D-G008		
		Chemical resistance	To satisfy Cr-E and 1 in KES D-G008		
		Weatherability	To satisfy We-0 and C in KES D-G008		
	Dust resistance		—	B	C-1 in KS R 1063
	• Pivot torque		(1) The manual and lever types shall satisfy the indicated value in the drawing. (2) For electric type, ① The electric torque shall be $6.9 \pm 2\text{ N}\cdot\text{cm}$ $\{0.7 \pm 0.2\text{ kgf}\cdot\text{cm}\}$. ② The manual torque shall satisfy the indicated value in the drawing.		7.3.1
	• Rotating torque of stay		To satisfy the indicated value in the drawing		7.3.2

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Performance of outer mirror	• Operating force of lever	Max. 9.8 N (1 kgf)	B	•7.3.3
	• Operating range of mirror face	To satisfy the indicated value in the drawing	A	Visually
	• Operating speed	2 - 4' /sec	B	•7.3.4
	• Operating current	Max. 1.0 A		•7.3.5
	• Operation noise	(1) Max. 70 dB for a fender mirror (2) Max. 60 dB for a door mirror		•7.3.6
	• Max. temp. of mirror face	Max. 60°C		•7.3.7
	• Reaching time to max. temp.	Max. 15 minutes		•7.3.7
	• Operating current	Max. 3.5 A		•7.3.7
	• Defrosting performance	Frost on 80% or more of the mirror face area shall be removed within 5 minutes after energizing.		•7.3.7
	• Noise	No noise such as squeaking, clattering and chattering noise of the door mirror by operation, running and door closing		Aurally
	• Flexing operating force	49 N {5 kgf} $\leq F \leq$ 68.6 N {7 kgf}		•7.3.9
	Corrosion resistance	No occurrence of rust.	B	7.3.12
	Durability	No crack nor break on portions where the damage can be seen without disassembly	B	7.3.13
	• Pivot torque	(1) The manual and lever types shall satisfy the indicated value in the drawing. (2) For electric type, ① The electric torque shall be $6.9 \pm 2 \text{ N} \cdot \text{cm}$ { $0.7 \pm 0.2 \text{ kgf} \cdot \text{cm}$ } . ② The manual torque shall satisfy the indicated value in the drawing.		•7.3.1

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Performance of outer mirror	• Rotating torque of stay	To satisfy the indicated value in the drawing	B	•7.3.2
	• Operating force of lever	Max. 9.8 N {1 kgf}		•7.3.3
	• Operating range of mirror face	To satisfy the indicated value in the drawing	A	•Visually
	• Operating speed	2 - 4°/sec	B	•7.3.4
	• Operating current	Max. 1.0 A		•7.3.5
	• Operation noise	(1) Max. 70 dB for a fender mirror. (2) Max. 60 dB for a door mirror.		•7.3.6
	• Max. temp. of mirror face	Max. 60°C		•7.3.7
	• Reaching time to max. temp.	Max. 15 minutes		•7.3.7
	• Operating current	Max. 3.5 A		•7.3.7
	• Defrosting performance	Frost on 80% or more of the mirror face area can be removed within 5 minutes after energizing.		•7.3.7
	• Noise	No noise such as squeaking, clattering and chattering noise of the door mirror by operation, running and door closing		•Aurally
	• Flexing operating force	49 N {5 kgf} $\leq F \leq$ 68.6 N {7 kgf}		•7.3.9
	Vibration resistance	(1) No deformation, breaking, nor coming-off of every part No displacement of the mirror face direction nor other defect	A	KS R 1034
		(2) No physical defect nor malfunction on every part of the electric power unit		SAE J575
	Hold fast capability	No break on every part	B	7.3.14

Table 1 (Continued)

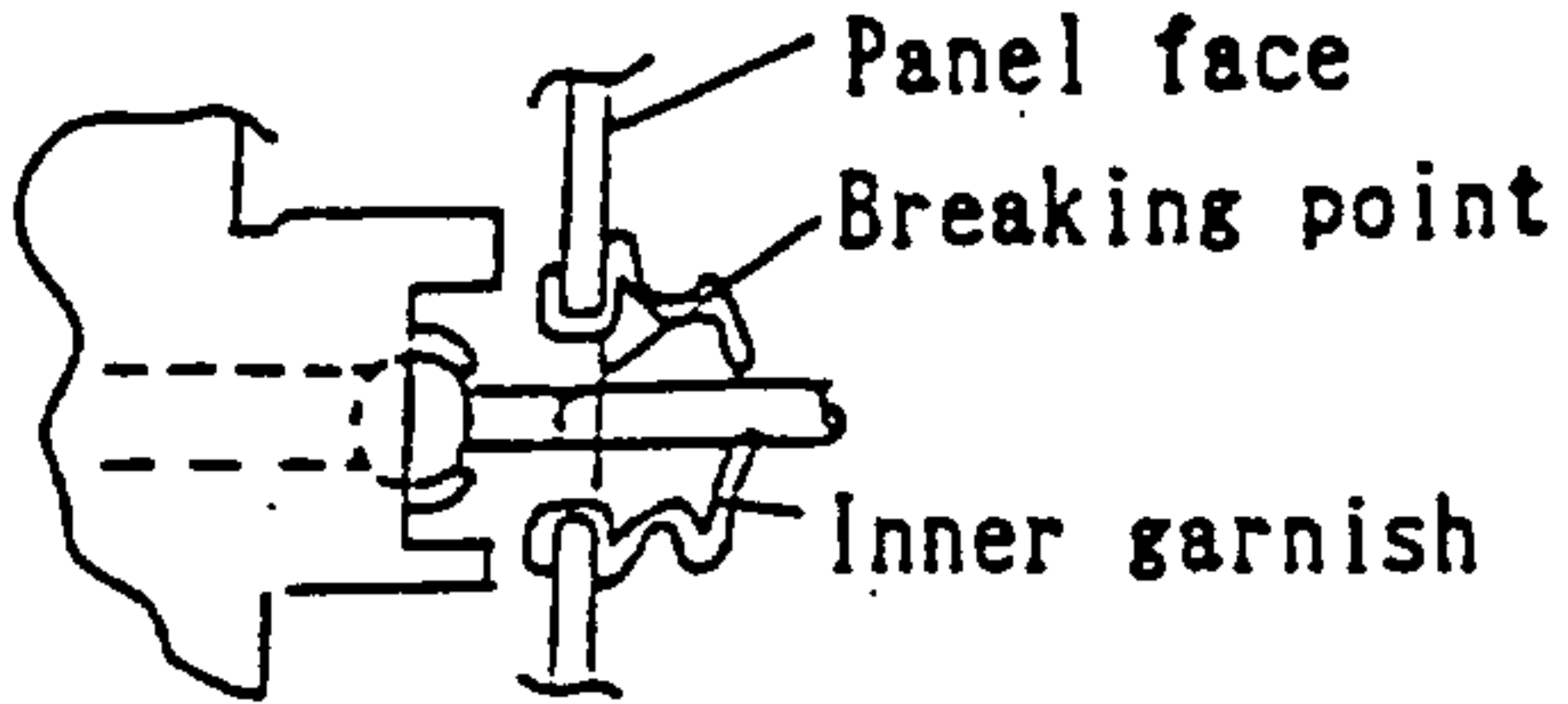
Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Performance of outer mirror	Holding force of knob and knob cover	No breaking nor deformation of the knob nor coming-off of the knob	B	7.3.15
	Breaking load of lever	(1) U.K. and EC specifications: $225.6 \text{ N } (23 \text{ kgf}) \leq F \leq 294.2 \text{ N } (30 \text{ kgf})$	AR	7.3.16
		(2) Others: $F \geq 225.6 \text{ N } (23 \text{ kgf})$ (3) In any case, the breaking shall occur on the part not protruding from the panel face of the inner garnish.	B	
				
	Harness strength	No harness breaking nor terminal coming-off	B	7.3.17
	Strength of fixing part to body	No crack on a fixing boss nor crush of a thread ridge	B	7.3.18
	Continuous conduction (Electric mirror)	No abnormal condition, igniting nor smoking on the motor rotating part	B	7.3.19
	Continuous conduction (Mirror with heater)	Insulation resistance: Min. 60 MΩ	B	7.3.20
	• Max. temp. of mirror face	Max. 60°C		7.3.7
	• Reaching time to max. temp.	Max. 15 minutes		7.3.7
	• Operating current	Max. 3.5 A		7.3.7
	• Defrosting performance	Frost on 80% or more of the mirror face area shall be removed within 5 minutes after energizing.		7.3.7
	Moisture resistance	(1) No water infiltration into each unit (2) No igniting nor smoking	A	7.3.21

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Performance of outer mirror	High-pressure water resistance	No abnormal operation	A	7.3.22
	ON and OFF repeatability	Insulation resistance: Min. 60 MΩ	A	7.3.23
	• Max. temp. of mirror face	Max. 60°C	B	7.3.7
	• Reaching time to max. temp.	Max. 15 minutes		7.3.7
	• Operating current	Max. 3.5 A		7.3.7
	• Defrosting performance	Frost on 80% or more of the mirror face area shall be removed within 5 minutes after energizing.		7.3.7
	Salt water resistance	(1) No abnormal condition in conductivity between terminals (2) Insulation resistance: Min. 60 MΩ	A	7.3.24
	• Max. temp. of mirror face	Max. 60°C	B	7.3.7
	• Reaching time to max. temp.	Max. 15 minutes		7.3.7
	• Operating current	Max. 3.5 A		7.3.7
	• Defrosting performance	Frost on 80% or more of the mirror face area shall be removed within 5 minutes after energizing.		7.3.7
	Appearance	To satisfy the standard of the minimum-acceptable sample on shrinkage, burrs, weld, cloud, crack, dirt, chipping-off, adherence of foreign matter, flaw, etc.	B	Visually
	Paint film	To satisfy TB2-C07, We03 and Ch2 in KES B-R001	B	KES T-M010

Table 1 (Continued)

Evaluation Item			Evaluation Standard	Quality Rank	Evaluation Method
Performance of outer mirror	Plating		The following specified in KES C-F002 shall be satisfied: (1) MFCrT5 (Ferrous iron material) * MFCrT6 for US and Canada specifications (2) NZCrT5 (Zinc material) (3) MPCrT2 (Resin material) * MFCrT3 for US and Canada specifications	B	KES C-F002
	Operability	Mirror pivot torque	(1) 98 - 196 N·cm {10 - 20 kgf·cm } (2) The pivot shall not rotate by operating the reflectance variable lever. (3) The lever shall not be changed by operating the mirror housing.	B	7.4.1
Operating range of mirror face		To satisfy the indicated value in the drawing	A	Visually	
Changing angle of prism mirror		To satisfy the indicated value in the drawing	B	7.4.2	
Operating force of reflectance variable lever		4.9 - 19.6 N {0.5 - 2.0 kgf } at the lever tip.	B	Push-pull gauge	
Performance of inner mirror	Environmental resistance	Short-term heat resistance	To satisfy HS-06, A2 and B2 in KES D-G008	B	KES D-G008
		Long-term heat resistance	To satisfy HQ -1, 04, A2 and B2 in KES D-G008	B	
		Cold resistance	To satisfy CS-0L, A2 and B2 in KES D-G008	B	
		Thermal shock resistance	To satisfy Th-02, D, A2 and B2 in KES D-G008	B	
		Chemical resistance	To satisfy Cr-1 and 0 in KES D-G008	B	
		Light resistance	To satisfy Li-0 and B in KES D-G008	B	
	Flame retardancy	Initial	To satisfy KES C-H001	AR	KES C-H001
After aging					

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Performance of Inner Mirror	Dust resistance	—	B	F-3 in KS R 1063
	Mirror pivot torque	(1) 98 - 196 N·cm {10 - 20 kgf·cm} (2) The pivot shall not rotate by operating the reflectance variable lever. (3) The lever shall not be changed by operating the mirror housing.		7.4.1
	Changing angle of prism mirror	To satisfy the indicated value in the drawing.	B	7.4.2
	Operational durability of pivot	(1) The torque after test shall be 98 N·cm {10 kgf·cm} or more at normal temperature (20 - 25 °C). (2) The pivot shall not rotate by operating the reflectance variable lever. (3) The lever shall not be changed by operating the mirror housing.	B	7.4.3
	Durability of reflectance variable lever	(1) To operate normally after test. (2) The operating force shall be 4.9 - 19.6 N {0.5 - 2.0 kgf} at the lever tip. (3) The pivot shall not rotate by operating the reflectance variable lever. (4) The lever shall not be changed by operating the mirror housing.	B	7.4.4
	Vibration resistance	No deformation, breaking nor coming-off of every part. No displacement of the mirror face direction nor other defect	B	KS R 1034
	Appearance	To satisfy the standard of the minimum-acceptable sample on shrinkage, burrs, weld, cloud, crack, bubble, dirt, chipping-off, adherence of foreign matter, flaw, etc.	B	Visually
	Paint film	To satisfy TA2-C05 and L112 in KES B-R001	B	KES T-M010

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Performance of inner mirror	Coming-off	In tests prescribed in regulations applied, the coming-off load shall be as follows: (1) Lower limit: To satisfy 98 N (10 kgf) (Without vibration-proof rubber) (2) Upper limit: To satisfy regulations applied (The mirror with vibration-proof rubber shall be measured with the rubber.)	Lower limit: A Upper limit: AR	According to the regulations of each country
	Strength of fixing part to body	No crack, twist nor crush of a fixing boss.	B	7.3.18

7. Evaluation Method

7.1 Common evaluation condition

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 5 of 20°C (20± 5°C) and grade 5 of 65% (65± 5%) respectively specified in KS A 0006.

7.2 General performance Applied both to the outer mirror and the inner mirror

7.2.1 Flatness of plane mirror

- (1) The flatness shall be measured with a mirror assy.
- (2) The measurement shall be performed in the standard condition specified in 7.1.1.
- (3) The flatness (reading of a curvature measuring device) in vertical and transverse directions at every measuring point shall be recorded with a curvature measuring device specified in EEC 79/795, as shown in Fig. 1.