

KES

Manual Window Regulators

KES D-C224

(ESTD 1891-08-20)

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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 wire type manual window regulators (hereinafter referred to as the "regulator") used for an automobile.

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) Regulator

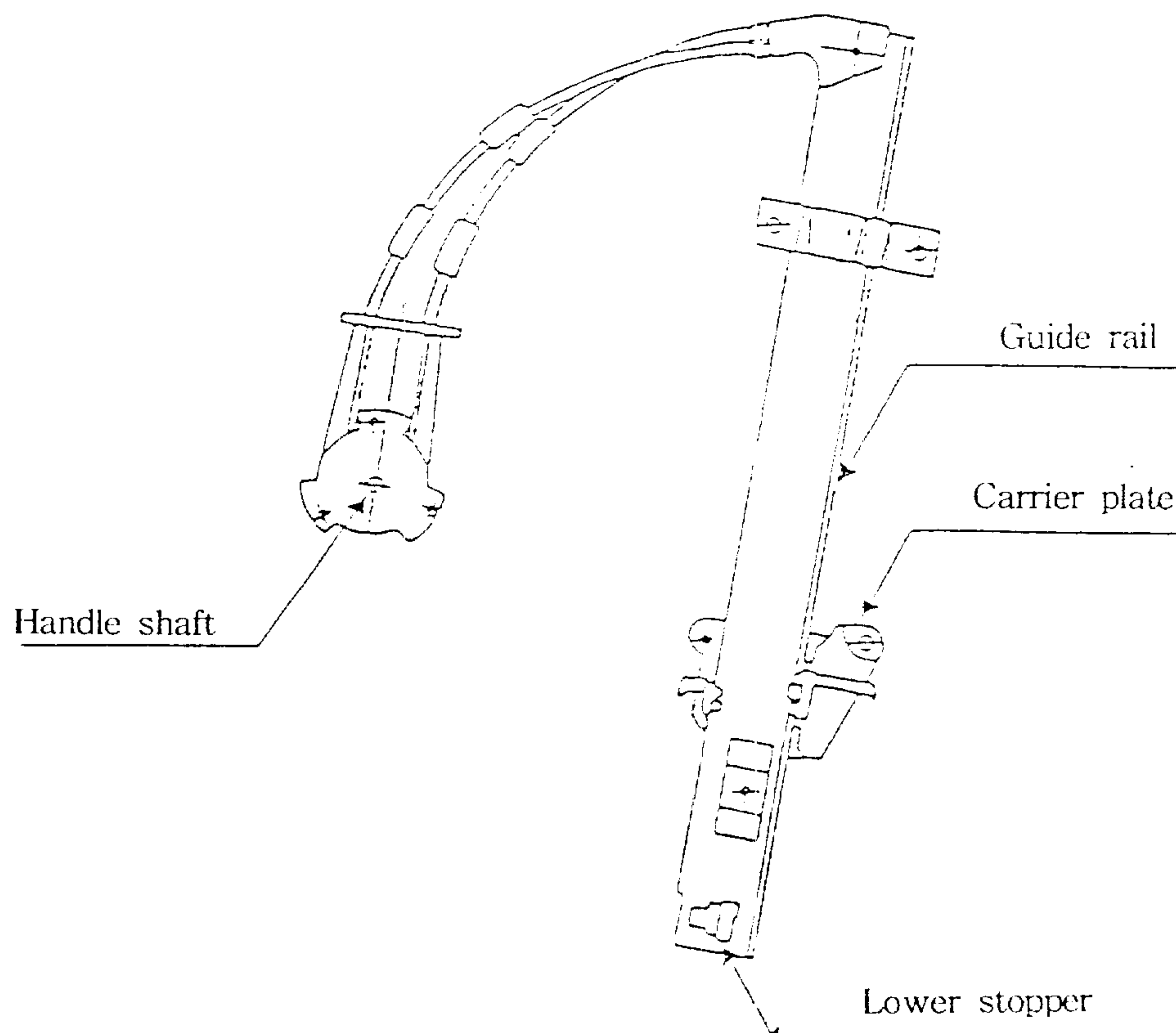


Fig. 1

(2) Actual stroke

Distance that the carrier plate moves under the vehicle condition from the completely opened position to completely close the window. In this standard, it shall be specified as the dimension in the WL direction.

(3) Full stroke

Distance that carrier plate of regulator can move.

In general, the full stroke is larger than the actual stroke, and the lower and position a of full stroke is the same as that of actual stroke.

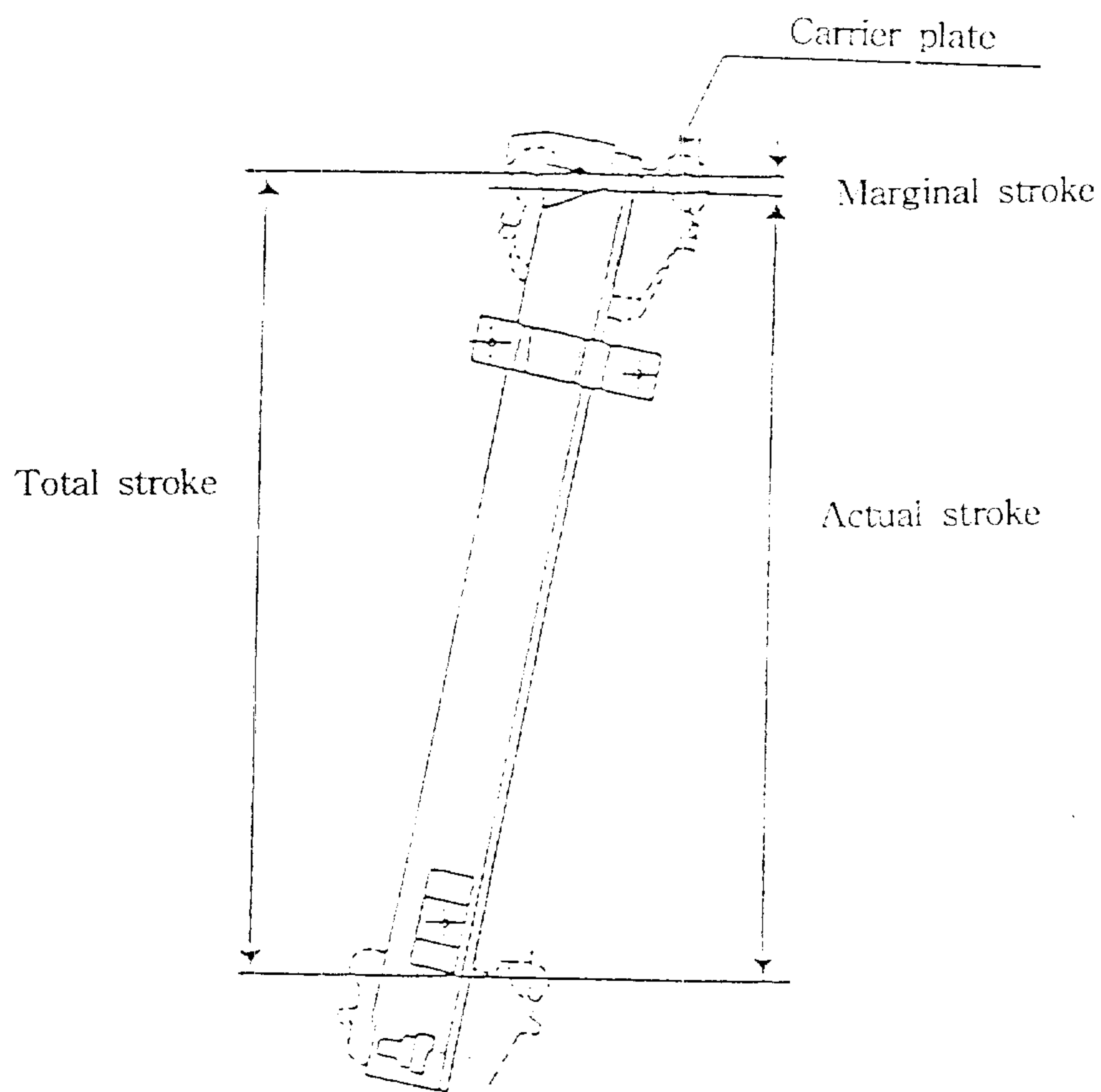


Fig. 2

(4) Forced torque

Torque applied to the operating handle at completely opened or closed position of glass after operating the regulator.

5 Specifications Indicated in Drawings

- (1) Glass weight
- (2) Sliding resistance when the glass is rising or lowering (glass moving channel, glass weatherstrip, weatherstrip, etc.)
- (3) Number of handle turning
- (4) Handle operating force
- (5) Difference in handle operating force
- (6) Full stroke, actual stroke

6. Evaluation Standard

Evaluation standard of a regulator 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: 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
Basic performance	Handle turning direction	(1) RH door : Window shall be rised when the handle is turned clock wise, and shall be lowered when the handle is turned counter clockwise. (2) LH door : Window shall be rised when the handle is turned clock wise, and shall be lowered when the handle is turned counter clockwise.	B	7.2.1
	Full stroke	Shall satisfy the full stroke indicated in the drawing.	B	7.2.1

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Basic performance	Number of turning	Shall satisfy the number of handle turning indicated in the drawing	B	7.2.3
	Difference in handle working force and working force	Shall satisfy the difference in handle working force and working force indicated in the drawing	B	7.2.4
	Braking performance	(1) Braking performance of lowering carrier plate ① After applying the load for 30 sec., carrier plate shall not be lowered 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be lowered further than the above ①. (2) Braking performance of rising carrier plate ① After applying the load for 30 sec., carrier plate shall not be risen 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be risen further than the above ① more.	B	7.2.5
	Handle shaft looseness	(1) Looseness to the turning direction shall be within $\pm 20^\circ$. (2) Looseness to the axial direction shall not exceed 1mm. (3) Swing looseness shall not exceed 30'.	B	7.2.6
	Glass turning looseness	Glass turning shall not exceed $\pm 5/1000$ rad.	B	7.2.7
	Glass holding rigidity	Glass turning shall not exceed $\pm 12/1000$ rad.	B	7.2.8
	Working quality	Working shall be smooth without hitch or unsmoothness	B	7.2.9
	Noise	No noise	B	7.2.10
Strength against medium-load	Handle strength against heavy load	Each part shall be free of abnormality, such as deformation or crack.	B	7.3.1
	• Carrier plate strength against heavy load		B	• 7.3.2
	•• Impact load		B	•• 7.3.3

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Strength against heavy load	...Difference in handle working force and working force	Shall satisfy the difference in handle working force and working force indicated in the crawling.	B	...7.2.4
	...Braking performance	(1) Braking performance of lowering carrier plate ① After applying the load for 30 sec., carrier plate shall not be lowered 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be lowered further than the above ① or more. (2) Braking performance of rising carrier plate ① After applying the load for 30 sec., carrier plate shall not be rised 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be rised further than the above ① or more.	B	...7.2.5
	...Handle shaft looseness	(1) Looseness to the turning direction shall be within $\pm 20^\circ$. (2) Looseness to the axial direction shall not exceed 1mm. (3) Swing looseness shall not exceed 30'.	B	...7.2.6
	...Glass turning looseness	Glass turning shall not exceed $\pm 5/1000$ rad.	B	...7.2.7
	...Glass holding rigidity	Glass turning shall not exceed $\pm 12/1000$ rad.	B	...7.2.8
	...Working quality	Working shall be smooth without hitch or unsmoothness	B	...7.2.9
	...Noise	No noise	B	...7.2.10
Vibration resistance	Impact resistance	Each part shall be free of abnormality, such as deformation or crack.	B	7.4.1
	• Working quality	Working shall be smooth without hitch or unsmoothness	B	• 7.2.9
	• Noise	No noise	B	• 7.2.10
	Vibration resistance	(1) Each part shall be free of abnormality, such as deformation or crack. (2) Carrier plate shall not be lowered	B	7.4.2

Table 1 (Continued)

Evaluation Item	Evaluation Standard	Quality Rank	Evaluation Method
Working durability at normal temperature	Each part shall be free of abnormality, such as deformation or crack.	B	7.5.1
• Difference in handle working force and working force	Shall satisfy the difference in handle working force and working force indicated in the drawing.	B	• 7.2.4
• Braking performance	(1) Braking performance of lowering carrier plate ① After applying the load for 30 sec., carrier plate shall not be lowered 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be lowered further than the above ① or more. (2) Braking performance of rising carrier plate ① After applying the load for 30 sec., carrier plate shall not be risen 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be risen further than the above ① or more.	B	• 7.2.5
• Handle shaft looseness	(1) Looseness to the turning direction shall be within $\pm 20^\circ$. (2) Looseness to the axial direction shall not exceed 1mm. (3) Swing looseness shall not exceed 30'.	B	• 7.2.6
• Glass turning looseness	Glass turning shall not exceed $\pm 5/1000$ rad.	B	• 7.2.7
• Glass holding rigidity	Glass turning shall not exceed $\pm 12/1000$ rad.	B	• 7.2.8
• Working quality	Working shall be smooth without hitch or unsmoothness	B	• 7.2.9
• Noise	No noise	B	• 7.2.10
Working durability at high temperature	Each part shall be free of abnormality, such as deformation or crack.	C	• 7.5.2
• Difference in handle working force and working force	Shall satisfy the difference in handle working force and working force indicated in the drawing	B	• 7.2.4

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Working durability	• Braking performance	(1) Braking performance of lowering carrier plate ① After applying the load for 30 sec., carrier plate shall not be lowered 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be lowered further than the above ①. (2) Braking performance of rising carrier plate ① After applying the load for 30 sec., carrier plate shall not be rised 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be rised further than the above ①.	B	• 7.2.5
	• Handle shaft looseness	(1) Losseness to the turning direction shall be within $\pm 20^\circ$. (2) Losseness to the axial direction shall not exceed 1mm. (3) Swing losseness shall not exceed 30'.	B	• 7.2.6
	• Glass turning losseness	Glass turning shall not exceed $\pm 5/1000$ rad.	B	• 7.2.7
	• Glass holding rigidity	Glass turning shall not exceed $\pm 12/1000$ rad.	B	• 7.2.8
	• Working quality	Working shall be smooth without hitch or unsmoothness	B	• 7.2.9
	• Noise	No noise	B	• 7.2.10
	Working durability at low temperature	Each part shall be free of abnormality, such as deformation or crack.	C	7.5.3
	• Difference in handle working force and working force	Shall satisfy the difference in handle working force and working force indicated in the drawing.	B	• 7.2.4

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Working durability	• Braking performance	(1) Braking performance of lowering carrier plate ① After applying the load for 30 sec., carrier plate shall not be lowered 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be lowered further than the above ① or more. (2) Braking performance of rising carrier plate ① After applying the load for 30 sec., carrier plate shall not be risen 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be risen further than the above ① or more.	B	• 7.2.5
	• Handle shaft looseness	(1) Looseness to the turning direction shall be within $\pm 20^\circ$. (2) Looseness to the axial direction shall not exceed 1 mm. (3) Swing looseness shall not exceed 30'.	B	• 7.2.6
	• Glass turning looseness	Glass turning shall not exceed $\pm 5/1000$ rad.	B	• 7.2.7
	• Glass holding rigidity	Glass turning shall not exceed $\pm 12/1000$ rad.	B	• 7.2.8
	• Working quality	Working shall be smooth without hitch or unsmoothness.	B	• 7.2.9
	• Noise	No noise	B	• 7.2.10
Environmental resistance	Heat and cold resistance	Each part shall be free of abnormality, such as deformation or crack.	C	7.6.1
	• Difference in handle working force and working force	Shall satisfy the difference in handle working force and working force indicated in the drawing	B	• 7.2.4
	• Braking performance	(1) Braking performance of lowering carrier plate ① After applying the load for 30 sec., carrier plate shall not be lowered 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be lowered further than the above ① or more.	B	• 7.2.5

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	• Braking performance	(2) Braking performance of rising carrier plate ① After applying the load for 30 sec., carrier plate shall not be risen 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be risen further than the above ① or more.	B	• 7.2.5
	• Handle shaft looseness	(1) Looseness to the turning direction shall be within $\pm 20'$. (2) Looseness to the axial direction shall not exceed 1mm. (3) Swing looseness shall not exceed $30'$ or more.	B	• 7.2.6
	• Glass turning looseness	Glass turning shall not exceed $\pm 5/1000$ rad.	B	• 7.2.7
	• Glass holding rigidity	Glass turning shall not exceed $\pm 12/1000$ rad.	B	• 7.2.8
	• Working quality	Working shall be smooth without hitch or unsmoothness	B	• 7.2.9
	• Noise	No noise	B	• 7.2.10
	•• Handle strength against heavy load	Each part shall be free of abnormality, such as deformation or crack.	B	•• 7.3.1
	••• Carrier plate strength against heavy load		B	••• 7.3.2
	Oil resistance	Each part shall be free of abnormality, such as deformation or crack.	B	7.6.2
	• Difference in handle working force and working force	Shall satisfy the difference in handle working force and working force indicated in the drawing	B	• 7.2.4
	• Braking performance	(1) Braking performance of lowering carrier plate ① After applying the load for 30 sec., carrier plate shall not be lowered 1 mm or more at no load. ② After applying the load for 10 min., carrier plate shall not be lowered further than the above ① or more.	B	• 7.2.5