

1994. 4. 5

KES

Heater Control

KES D-C459

(EST.)1993-06-01 [SJ]

Contents

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

Appendix



.. 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 the heater control.

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

- (1) Telltale Display device for indicating the operation of an equipment, or the normal or abnormal operation or condition, or malfunction by using illumination signals (optical signals).
- (2) Symbol Explanatory diagram for discriminating control and telltale.
- (3) Noise Unexpected sound
- (4) INS Signal (power source) line showing the lighting of night illumination.
- (5) Smoking and igniting The smoking means the condition that the smoke equivalent to 1 cigarette flows out of the case. The igniting means the condition that the flame blazes up out of the case.
- (6) Acceptance sample Sample of an item prescribing a matter that must not be essentially or is difficult to represent the maximum or minimum limit quantitatively by which a supplier represents concretely his intension to mass-produce into better condition than the limit equivalent to the one deviating most from Kia's direction of the dispersion in mass production.

(7) Standard sample Sample prepared into the standard condition of an item (example: color tone) indicated in a specification that is difficult to represent quantitatively, for mass production by a supplier under Kia's direction.

(8) Abbreviations

- T1: Minimum value of storage proof temperature
- T2: Minimum value of working proof temperature
- T3: Minimum value of performance proof temperature
- T4: Maximum value of performance proof temperature
- T5: Maximum value of working proof temperature
- T6: Maximum value of storage proof temperature of switch
- T7: Maximum value of storage proof temperature of panel
- V1: Minimum value of working proof voltage
- V2: Minimum value of performance proof voltage
- V3: Maximum value of performance proof voltage
- V4: Maximum value of working proof voltage
- SW: Switch

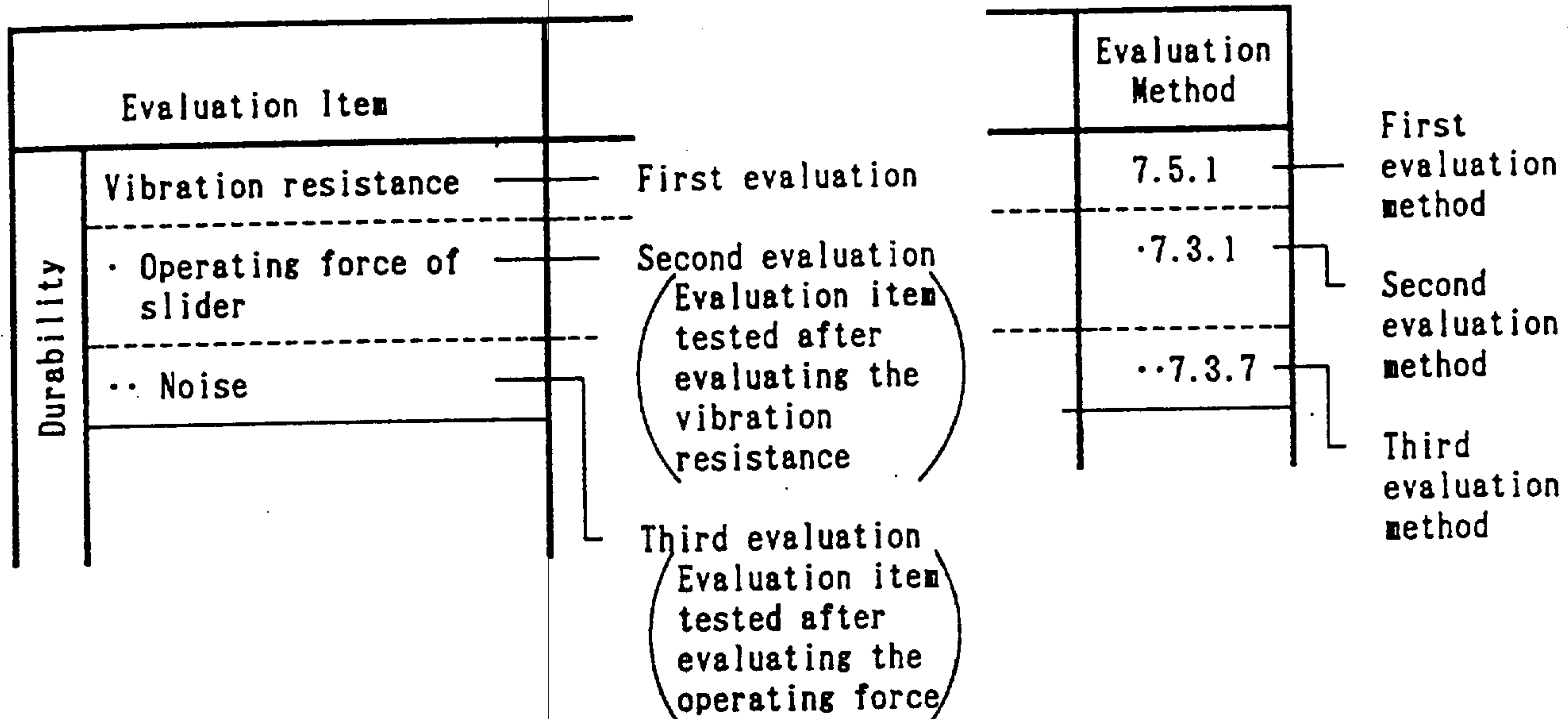
5. Specification Indicated in Drawings

- (1) Surface treatment of display
- (2) Color tone of symbol
- (3) Position of symbol
- (4) Surface finish
- (5) Directional angle of telltale
- (6) Color tone and brightness of telltale
- (7) Knob stroke
- (8) Operating stroke
- (9) Operating force
- (10) Operating waveform

Evaluation Standard

The evaluation standard of the heater control 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
Appearance	Display	Clearance between display edge and case (panel)	C	7.2.1(1) in MES PS 61190
		Edge treatment on display	C	7.2.1(2) in MES PS 61190
		Surface condition of display	C	7.2.1(3) in MES PS 61190
		Surface treatment of display	C	7.2.1(4) in MES PS 61190
		Symbol	C	7.2.1(5) in MES PS 61190
		Color tone of symbol	C	7.2.1(6) in MES PS 61190
		Positional deviation of symbol	C	7.2.1(7) in MES PS 61190
	Knob and case opening part	Clearance between push knob and opening part	C	7.2.2(1) in MES PS 61190
		Appearance of case (panel) opening part	C	7.2.2(2) in MES PS 61190
		Uniformity of push knobs in vertical direction	C	7.2.2(4) in MES PS 61190

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Appearance	Flaw, nick or gouge, dirt, warp and burr	To meet the evaluation standard of 7.2.3 (Flaw, nick or gouge, dirt, warp and burr) in MES PS 61190.	C	7.2.3 in MES PS 61190
	Shrinkage, burr, flow line and weld line	To meet the evaluation standard of 7.2.4 (Shrinkage, burr, flow line and weld line) in MES PS 61190.	C	7.2.4 in MES PS 61190
	Surface finish	To meet the evaluation standard of 7.2.5 (Surface finish) in MES PS 61190.	C	7.2.5 in MES PS 61190
	Dulling of resinous parts	To meet the evaluation standard of 7.2.6 (Dulling of resinous parts) in MES PS 61190.	B	7.2.6 in MES PS 61190
	Discoloration	To meet the evaluation standard of 7.2.7 (Discoloration) in MES PS 61190.	B	7.2.7 in MES PS 61190
	Crack	To meet the evaluation standard of 7.2.8 (Crack) in MES PS 61190.	B	7.2.8 in MES PS 61190
	Rust at metallic parts	According to an acceptance sample.	B	(Visual)
	Uneven plating at metallic parts	According to an acceptance sample.	B	(Visual)
	Looseness at caulking and tightening parts	According to an acceptance sample.	B	(Visual)
Performance and function	Night illumination	Color tone, brightness and these dispersions	C	7.3.4 in MES PS 61190
		Temperature rise on display surface in bulb lighting	B	7.3.5 in MES PS 61190
		Light leakage	B	7.3.6 in MES PS 61190

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method																	
Performance and function	Operability	Operating stroke	To meet the requirements in a drawing.	C	7.2.1																
		Operating force	To meet the requirements in a drawing.	C	7.2.2																
		Operating waveform	• To meet the requirements in a drawing. • To submit the measuring data to Kia unless otherwise specified	C	7.2.3																
		Operating feel and sound	To be smooth without interference, rattle and noise. (According to a standard sample)	C	7.2.4																
		Looseness and rigidity at operating part	To meet the table below	B	7.2.5																
	<table><tr><td></td><td>Lever Type</td><td>Dial Type</td></tr><tr><td>Operating direction</td><td>1 mm max.</td><td>3° max.</td></tr><tr><td>Vertical direction</td><td>1 mm max.</td><td>1 mm max.</td></tr><tr><td>Transverse direction</td><td>1 mm max.</td><td>1 mm max.</td></tr><tr><td>Longitudinal direction</td><td>1 mm max.</td><td>1 mm max.</td></tr><tr><td>Stopper rigidity</td><td>1 mm/kg max.</td><td>3° /kg max.</td></tr></table>			Lever Type	Dial Type	Operating direction	1 mm max.	3° max.	Vertical direction	1 mm max.	1 mm max.	Transverse direction	1 mm max.	1 mm max.	Longitudinal direction	1 mm max.	1 mm max.	Stopper rigidity	1 mm/kg max.	3° /kg max.	
	Lever Type	Dial Type																			
Operating direction	1 mm max.	3° max.																			
Vertical direction	1 mm max.	1 mm max.																			
Transverse direction	1 mm max.	1 mm max.																			
Longitudinal direction	1 mm max.	1 mm max.																			
Stopper rigidity	1 mm/kg max.	3° /kg max.																			
Electric characteristics	Abnormal voltage resistance (A)	No smoking nor igniting	A	7.3.1																	
	• Operating force	To meet the requirements in a drawing	B	7.2.2																	
	• Color tone, brightness and these dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and these dispersions) in MES PS 61190	B	7.3.4 in MES PS 61190																	

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Electric characteristics	Contact point voltage drop	To meet the evaluation standard of 7.4.1 (Contact point voltage drop) in MES PS 61190	C	7.4.1 in MES PS 61190
	Insulation resistance	To meet the evaluation standard of 7.4.2 (Insulation resistance) in MES PS 61190	C	7.4.2 in MES PS 61190
	Contact point voltage drop Except direct type FAN SW	To meet the evaluation standard of 7.4.1(a) {Contact point voltage drop (Except direct type FAN SW)} in MES PS 61190	C	7.4.1(a) in MES PS 61190
	Direct type FAN SW only	To meet the evaluation standard of 7.4.1(b) {Contact point voltage drop (Direct type FAN SW only)} in MES PS 61190	C	7.4.1(b) in MES PS 61190
	Insulation resistance	To meet the evaluation standard of 7.4.2 (Insulation resistance) in MES PS 61190	B	7.4.2 in MES PS 61190
	Dielectric strength	To meet the evaluation standard of 7.4.3 (Dielectric strength) in MES PS 61190	B	7.4.3 in MES PS 61190
	Abnormal voltage resistance (B)	To meet the evaluation standard of 7.4.5 {Abnormal voltage resistance (B)} in MES PS 61190	A	7.4.5 in MES PS 61190
	Abnormal current resistance	To meet the evaluation standard of 7.4.6 (Abnormal current resistance) in MES PS 61190	A	7.4.6 in MES PS 61190
Strength	Lever strength	No deformation nor damage	B	7.4.1
	Wire clamp strength	No displacement of outer wire	B	7.4.2
	Buckling strength of wire	No buckling	B	7.4.3
	Inserting force of knob	6 kgf {39.2 N} max.	C	7.4.4
	Coming-off force of knob	5 ± 1 kgf {29.4 ± 9.8 N}	C	7.4.5

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Strength	Strength of mounting part	To meet the evaluation standard of 7.5.1 (Strength of mounting part) in MES PS 61190	B	7.5.1 in MES PS 61190
	Knob strength	To meet the evaluation standard of 7.5.2 (Knob strength) in MES PA 61190	B	7.5.2 in MES PS 61190
	Lead wire strength	To meet the evaluation standard of 7.5.4 (Lead wire strength) in MES PS 61190	C	7.5.4 in MES PS 61190
	Connector lock strength	To meet the evaluation standard of 7.5.5 (Connector lock strength) in MES PS 61190	C	7.5.5 in MES PS 61190
	• Contact point voltage drop	To meet the evaluation standard of 7.4.1(a) {Contact point voltage drop (Except direct type FAN SW)} in MES PS 61190	C	• 7.4.1(a) in MES PS 61190
	• Insulation resistance	To meet the evaluation standard of 7.4.2 (Insulation resistance) in MES PS 61190	B	• 7.4.2 in MES PS 61190
	Abrasion resistance of printed part on display	To meet the evaluation standard of 7.5.6 (Abrasion resistance of printed part on display) in MES PS 61190	C	7.5.6 in MES PS 61190
	Liquid abrasion resistance of printed part on display	To meet the evaluation standard of 7.5.7 (Liquid abrasion resistance of printed part on display) in MES PS 61190	C	7.5.7 in MES PAS 61190
	Throwing power of printing part on display	To meet the evaluation standard of 7.5.8 (Throwing power of printing part on display) in MES PS 61190	C	7.5.8 in MES PS 61190
	Flammability	To meet the evaluation standard of 7.5.9 (Flammability) in MES PS 61190	C	7.5.9 in MES PS 61190
I	Noise	No noise	C	(Aurally)
Durability	Vibration durability	No deformation, damage nor loosening	B	7.5.1
	• Operating stroke	To meet the requirements in a drawing	C	• 7.2.1

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Durability	• Operating force	To meet the requirements in a drawing	C	•7.2.2
	• Operating feel and sound	To be smooth without interference, rattle and noise	C	•7.2.4
	• Color tone, brightness and these dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and these dispersions) in MES PS 61190	C	•7.3.4 in MES PS 61190
	• Light leakage	To meet the evaluation standard of 7.3.6 (Light leakage) in MES PS 61190	B	•7.3.6 in MES PS 61190
	• Contact point voltage drop	To meet the evaluation standard of 7.4.1 (Contact point voltage drop) in MES PS 61190	C	•7.4.1 in MES PS 61190
	• Insulation resistance	To meet the evaluation standard of 7.4.2 (Insulation resistance) in MES PS 61190	B	•7.4.2 in MES PS 61190
	Operational durability	No deformation, damage nor loosening	—	7.5.2
	• Operating stroke	To meet the requirements in a drawing	C	•7.2.1
	• Operating force	To meet the requirements in a drawing	C	•7.2.2
	• Operating feel and sound	To be smooth without interference, rattle and noise	C	•7.2.4
	• Color tone, brightness and these dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and these dispersions) in MES PS 61190	C	•7.3.4 in MES PS 61190
	• Light leakage	To meet the evaluation standard of 7.3.6 (Light leakage) in MES PS 61190	B	•7.3.6 in MES PS 61190
	• Contact point voltage drop	To meet the evaluation standard of 7.4.1(a) {Contact point voltage drop (Except direct type FAN SW)} in MES PS 61190	C	•7.4.1(a) in MES PS 61190

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Durability	• Insulation resistance	To meet the evaluation standard of 7.4.2 (Insulation resistance) in MES PS 61190	B	• 7.4.2 in MES PS 61190
	• Bulb durability for night illumination	To meet the evaluation standard of 7.7.3 (Bulb durability for night illumination) in MES PS 61190	B	• 7.7.3 in MES PS 61190
Environmental resistance	Thermal shock resistance	No deformation, deterioration nor damage	B	7.6.1
	• Operating stroke	To meet the requirements in a drawing	C	• 7.2.1
	• Operating force	To meet the requirements in a drawing	C	• 7.2.2
	• Operating feel and sound	To be smooth without interference, rattle and noise	C	• 7.2.4
	• Clearance between display edge and case	To meet the evaluation standard of 7.2.1(1) (Clearance between display edge and case) in MES PS 61190	C	• 7.2.1(1) in MES PS 61190
	• Surface condition of display	To meet the evaluation standard of 7.2.1(3) (Surface condition of display) in MES PS 61190	C	• 7.2.1(3) in MES PS 61190
	• Clearance between push knob and opening part	To meet the evaluation standard of 7.2.2(1) (Clearance between push knob and opening part) in MES PS 61190	C	• 7.2.2(1) in MES PS 61190
	• Dulling of resinous parts	To meet the evaluation standard of 7.2.6 (Dulling of resinous parts) in MES PS 61190	B	• 7.2.6 in MES PS 61190
	• Discoloration	To meet the evaluation standard of 7.2.7 (Discoloration) in MES PS 61190	B	• 7.2.7 in MES PS 61190
	• Crack	To meet the evaluation standard of 7.2.8 (Crack) in MES PS 61190	B	• 7.2.8 in MES PS 61190
	• Color tone, brightness and these dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and these dispersions) in MES PS 61190	C	• 7.3.4 in MES PS 61190

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	• Contact point voltage drop	To meet the evaluation standard of 7.4.1(a)(b) (Contact point voltage drop) in MES PS 61190	C	•7.4.1(a)(b) in MES PS 61190
	• Insulation resistance	To meet the evaluation standard of 7.4.2 (Insulation resistance) in MES PS 61190	B	•7.4.2 in MES PS 61190
	Low-temperature workability	No deformation, deterioration nor damage	B	7.6.2
	• Operating stroke	To meet the requirements in a drawing	C	•7.2.1
	• Operating force	To meet the requirements in a drawing	C	•7.2.2
	• Operating feel and sound	To be smooth without interference, rattle and noise	C	•7.2.4
	• Clearance between display edge and case	To meet the evaluation standard of 7.2.1(1) (Clearance between display edge and case) in MES PS 61190	C	•7.2.1(1) in MES PS 61190
	• Surface condition of display	To meet the evaluation standard of 7.2.1(3) (Surface condition of display) in MES PS 61190	C	•7.2.1(3) in MES PS 61190
	• Clearance between push knob and opening part	To meet the evaluation standard of 7.2.2(1) (Clearance between push knob and opening part) in MES PS 61190	C	•7.2.2(1) in MES PS 61190
	• Dulling of resinous parts	To meet the evaluation standard of 7.2.6 (Dulling of resinous parts) in MES PS 61190	B	•7.2.6 in MES PS 61190
	• Discoloration	To meet the evaluation standard of 7.2.7 (Discoloration) in MES PS 61190	B	•7.2.7 in MES PS 61190
	• Crack	To meet the evaluation standard of 7.2.8 (Crack) in MES PS 61190	B	•7.2.8 in MES PS 61190
	• Color tone, brightness and these dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and these dispersions) in MES PS 61190	C	•7.3.4 in MES PS 61190

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	• Contact point voltage drop	To meet the evaluation standard of 7.4.1(a)(b) (Contact point voltage drop) in MES PS 61190	C	•7.4.1(a)(b) in MES PS 61190
	High-temperature workability	No deformation, deterioration nor damage	B	7.6.3
	• Operating stroke	To meet the requirements in a drawing	C	•7.2.1
	• Operating force	To meet the requirements in a drawing	C	•7.2.2
	• Operating feel and sound	To be smooth without interference, rattle and noise	C	•7.2.4
	• Clearance between display edge and case	To meet the evaluation standard of 7.2.1(1) (Clearance between display edge and case) in MES PS 61190	C	•7.2.1(1) in MES PS 61190
	• Surface condition of display	To meet the evaluation standard of 7.2.1(3) (Surface condition of display) in MES PS 61190	C	•7.2.1(3) in MES PS 61190
	• Clearance between push knob and opening part	To meet the evaluation standard of 7.2.2(1) (Clearance between push knob and opening part) in MES PS 61190	C	•7.2.2(1) in MES PS 61190
	• Dulling of resinous parts	To meet the evaluation standard of 7.2.6 (Dulling of resinous parts) in MES PS 61190	B	•7.2.6 in MES PS 61190
	• Discoloration	To meet the evaluation standard of 7.2.7 (Discoloration) in MES PS 61190	B	•7.2.7 in MES PS 61190
	• Crack	To meet the evaluation standard of 7.2.8 (Crack) in MES PS 61190	B	•7.2.8 in MES PS 61190
	• Color tone, brightness and dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and these dispersions) in MES PS 61190	C	•7.3.4 in MES PS 61190
	• Contact point voltage drop	To meet the evaluation standard of 7.4.1(a)(b) (Contact point voltage drop) in MES PS 61190	C	•7.4.1(a)(b) in MES PS 61190

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	High-temperature creep resistance		B	7.6.4
	• Operating stroke	To meet the requirements in a drawing	C	7.2.1
	• Operating force	To meet the requirements in a drawing	C	7.2.2
	• Operating feel and sound	To be smooth without interference, rattle and noise	C	7.2.4
	• Clearance between display edge and case	To meet the evaluation standard of 7.2.1(1) (Clearance between display edge and case) in MES PS 61190	C	7.2.1(1) in MES PS 61190
	• Surface condition of display	To meet the evaluation standard of 7.2.1(3) (Surface condition of display) in MES PS 61190	C	7.2.1(3) in MES PS 61190
	• Clearance between push knob and opening part	To meet the evaluation standard of 7.2.2(1) (Clearance between push knob and opening part) in MES PS 61190	C	7.2.2(1) in MES PS 61190
	• Dulling of resinous parts	To meet the evaluation standard of 7.2.6 (Dulling of resinous parts) in MES PS 61190	B	7.2.6 in MES PS 61190
	• Discoloration	To meet the evaluation standard of 7.2.7 (Discoloration) in MES PS 61190	B	7.2.7 in MES PS 61190
	• Color tone, brightness and these dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and these dispersions) in MES PS 61190	C	7.3.4 in MES PS 61190
	Humidity resistance	No erroneous operation	B	7.6.5
	• Operating force	To meet the requirements in a drawing	C	7.2.2
	• Operating feel and sound	To be smooth without interference, rattle and noise	C	7.2.4
	• Clearance between display edge and case	To meet the evaluation standard of 7.2.1(1) (Clearance between display edge and case) in MES PS 61190	C	7.2.1(1) in MES PS 61190

Table 1 (Continued)

Evaluation Item		Evaluation Standard	Quality Rank	Evaluation Method
Environmental resistance	• Surface condition of display	To meet the evaluation standard of 7.2.1(3) (Surface condition of display) in MES PS 61190	C	• 7.2.1(3) in MES PS 61190
	• Color tone, brightness and dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and dispersions) in MES PS 61190	C	• 7.3.4 in MES PS 61190
	• Contact point voltage drop	To meet the evaluation standard of 7.4.1(a)(b) (Contact point voltage drop) in MES PS 61190	C	• 7.4.1(a)(b) in MES PS 61190
	• Insulation resistance	To meet the evaluation standard of 7.4.2 (Insulation resistance) in MES PS 61190	B	• 7.4.2 in MES PS 61190
	Continuous bulb energizing		—	7.6.6
	• Operating force	To meet the requirements in a drawing	C	• 7.2.2
	• Operating feel and sound	To be smooth without interference, rattle and noise	C	• 7.2.4
	• Clearance between display edge and case	To meet the evaluation standard of 7.2.1(1) (Clearance between display edge and case) in MES PS 61190	C	• 7.2.1(1) in MES PS 61190
	• Surface condition of display	To meet the evaluation standard of 7.2.1(3) (Surface condition of display) in MES PS 61190	C	• 7.2.1(3) in MES PS 61190
	• Clearance between push knob and opening part	To meet the evaluation standard of 7.2.2(1) (Clearance between push knob and opening part) in MES PS 61190	C	• 7.2.2(1) in MES PS 61190
	• Discoloration	To meet the evaluation standard of 7.2.7 (Discoloration) in MES PS 61190	B	• 7.2.7 in MES PS 61190
	• Color tone, brightness and these dispersions	To meet the evaluation standard of 7.3.4 (Color tone, brightness and these dispersions) in MES PS 61190	C	• 7.3.4 in MES PS 61190