KES

Mechanical Type Stop Lamp Switch

KES D - C641

Contents

KIA MOTORS

1. Scope of Application

This standard specifies the Mechanical Type Stop Lamp Switch for use in automobiles.

2. Relation with Specification

This standard is to define the standards of testing method, judgement, quality rank. Other necessary testing method, judgement standard than the foregoing shall be defined in the specification. In such case, specification preceeds this standard.

3. Environment Condition of Test Place and Test Voltage

Unless otherwis specified, the test shall be normal temperature,per formed at normal humidity and nominal voltage. However, the normal temperature, and humidity are meant to be the combination of class 4 temperature (20±15℃), class 3 humidity (65±20%) specified in KS A 0006 (standard atmaspheric conditions of testing place).

4. Test Item, Method, Judgement Standard and Quality Rank

The test item, method, judgement standard and quality rank shall be as shown in Attached Table 1.

Appendix

This standard is effective from the date of establishment and revision

Standard Quoted

KS A 0006	(Standard atmospheric conditions of testing place)
KS R 1034	(Vibration test method for automobile parts)

<table>
<tr><th>Test Classif-ication</th><th>No.</th><th>Test Item</th><th>Test Condition and Method</th><th>Judgement Standard</th><th>Quality Rank</th><th>Remark</th></tr>
<tr><td rowspan="3">Basic Performance</td><td>4-5</td><td>Insulation resistance</td><td>At the conditions of manipulating all stroke and between terminal and case, measure insulation resistance between terminals with DC 500V insulation resistance gauge.</td><td>1MΩ or more.</td><td>B</td><td></td></tr>
<tr><td>4-6</td><td>Voltage drop</td><td>Supply regular electric current, and measure voltage drop between switch terminals.</td><td>The average value of 3 time tests shall be under instructed value of Table 1.
Table 1
<table>
<tr><th rowspan="2">Electric Current (I)</th><th colspan="2">Voltage Drop</th></tr>
<tr><th>Befor test</th><th>After test</th></tr>
<tr><td>1≤15A</td><td>0.125 V</td><td>0.25V</td></tr>
<tr><td>15A≤I ≤25 A</td><td>½ [0.25 + (I-15) x 0.015)] V</td><td>[0.25 + (I-15) x 0.15] V</td></tr>
<tr><td>24A≤I</td><td>0.2V</td><td>0.4V</td></tr>
</table></td><td></td><td></td></tr>
<tr><td rowspan="4">Reliability</td><td>4-7</td><td>Insulation resistance</td><td>Add voltage of AC 500V with ordinary cycle between terminal and case for 1 min.</td><td>NO irregularities such as insulation destroy, Flash Over, creeping discharge.</td><td>B</td><td></td></tr>
<tr><td>4-8</td><td>Impact resistance</td><td>At regular attachment position of switch, add 50g of acceleration (or deceleration) the direction of up and down.</td><td>No irregularities such as destroy, or looseness of respective elements.</td><td>B</td><td></td></tr>
<tr><td>4-9</td><td>Vibration resistance</td><td>4-9-1
Vibration resistance test (A) vibrate at the instructed condition of Table 2 below. However this test shall be applied to the parts designated through a consultation with maker at developement stage.</td><td>No irregularities such as destroy or looseness at respective elements.</td><td>B</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

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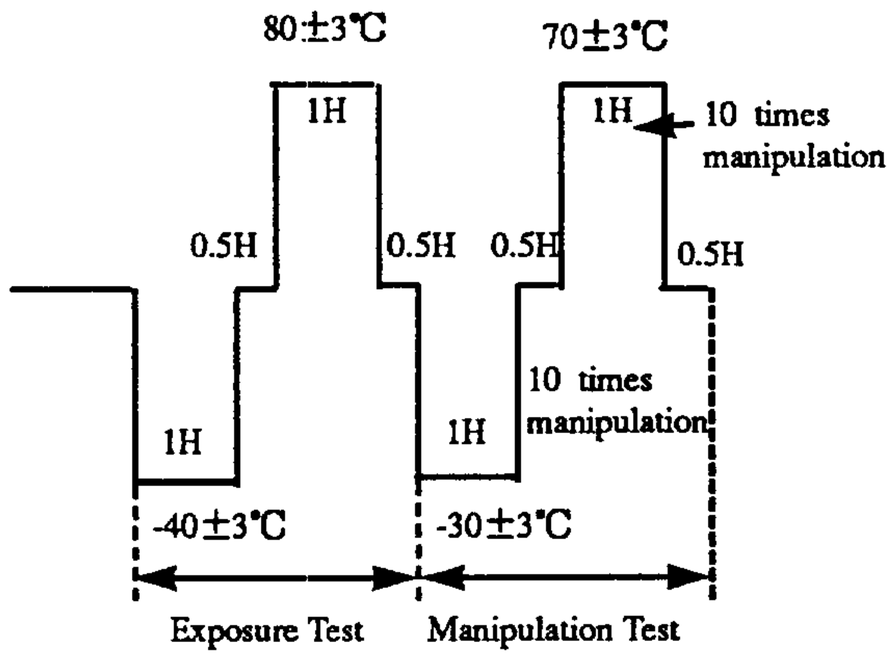
<tr><th>Test Classif-ication</th><th>No.</th><th>Test Item</th><th>Test Condition and Method</th><th>Judgement Standard</th><th>Quality Rank</th><th>Remark</th></tr>
<tr><td rowspan="3">Reliability</td><td></td><td></td><td colspan="2">Table 3
<table>
<tr><th rowspan="2">Stage</th><th rowspan="2">Vibration Frequency (C/M)</th><th rowspan="2">Accele-ration (g)</th><th colspan="3">Vibrating Time</th></tr>
<tr><th>Up Down</th><th>Left Right</th><th>Forth Back</th></tr>
<tr><td>4G</td><td>4,000</td><td>4.4</td><td>4H</td><td>2H</td><td>2H</td></tr>
</table></td><td></td><td></td></tr>
<tr><td>4-10</td><td>Temperature resistance</td><td>Perform test at the condition as instructed below. For manipulation tests, expose 1 hour each at -30℃ and 70℃ and manipulate 10 times each manually. And, no voltage shall be loaded except when manipulating. After test, measure insulation resistance of 4-5 and voltage drop of 4-6 at normal temperature.</td><td>During test and after test there shall be no irrgularities such as harmful deformation, swell-up, crack at respective portion and satisfy the after test values of 4-5 and 4-6.</td><td>B</td><td></td></tr>
<tr><td colspan="5"> 

Voltage: 14 V when nominal voltage is 12 V.
(28 V) when nominal voltage is (24 V)
Load: Actual load (or rated electric current)</td></tr>
</table>

<table>
<tr><th>Test Classif-ication</th><th>No.</th><th>Test Item</th><th>Test Condition and Method</th><th>Judgement Standard</th><th>Quality Rank</th><th>Remark</th></tr>
<tr><td rowspan="3">Reliability</td><td>4-13</td><td>Duration</td><td>4-13-1
Long term duration test
o Test shall be performed according to the conditions instructed in following Table 6. Measure voltage drops 5-10 times before and after test in total, and measure manipulation strength and insulation resistance before and after test.

Table 6
<table><tr><th>Item</th><th>Condition</th></tr><tr><td>Voltage</td><td>14V when nominal voltage is 12V.</td></tr><tr><td></td><td>28V when nominal voltage is 24V.</td></tr><tr><td>Load</td><td>120% of rated lamp load</td></tr><tr><td>Switching Speed</td><td>15-30 Times/min.</td></tr><tr><td>Moving Time of Push Rod</td><td>0.5 sec.or less</td></tr><tr><td>Manipulaing Freguency</td><td>1 x 16^6</td></tr><tr><td>On Time</td><td>15-20% limits in 1 cycle</td></tr></table></td><td>No irregularities during test and after test, the voltage drop shall satisfy after test value of 4-6.
The manipulation strength and insulation resistance shall satisfy 4-3 and 4-5.</td><td>B</td><td></td></tr>
<tr><td>4-13-2
Short thrm duration test
o Same as the conditions of long term duration test only the maniputing frequency is as follows.
Manipulating frequency:
5 x 10^4</td><td>Same as 4-13-1</td><td></td><td>n=10
/10 months</td></tr>
</table>

Test Classif-ication	No.	Test Item	Test Condition and Method	Judgement Standard	Quality Rank	Remark
Reliability	4-14	Convection current test	Depending on the inferiority of composed parts, establish the condition that may generate utmost heat and saturate temperature. However, regarding establishing conditions and parts, they may be consulted case by case. Remark: Composed parts means the load and wire harness that compose the circuits and the switch.	No danger of fire and uneasiness.	B	

<table>
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<tr><td></td><td>4-11</td><td>Humidity resistance</td><td>Test shall be performed at the conditions instructed in table 4 below. After test, expose 24 hours to normal temperature and humidity, and measure insulation resistance and voltage drop.

Table 4
<table><tr><td>Temperature</td><td>45±3℃</td></tr><tr><td>Humidity</td><td>90-95%</td></tr><tr><td>Times</td><td>72 hours</td></tr></table></td><td>After test, insulation and voltage drop shall satisfy the after test values of 4-5 and 4-6.</td><td>B</td><td></td></tr>
<tr><td></td><td>4-12</td><td>Temperature rising at contact point</td><td>Supply rated electric current, and measure the temperature of conductive portion near contact point with thermo-couples.

Table 5
<table><tr><th colspan="2">Temperature of Contact Point</th><th>Tempeature Rising</th></tr><tr><td rowspan="2">Magnet Contact</td><td>Copper or copper alloys</td><td>30 deg.</td></tr><tr><td>Silver or silver alloys</td><td>50 deg.</td></tr><tr><td rowspan="2">Stroke Contact</td><td>Copper or copper alloys</td><td>40 deg.</td></tr><tr><td>Silver or silver alloys</td><td>65 deg.</td></tr></table></td><td>The rising temperature at the time when the temperature of all part become even and constant shall be under the value of following Table 5.</td><td>B</td><td></td></tr>
</table>

Test Classif-ication	No.	Test Item	Test Condition and Method	Judgement Standard	Quality Rank	Remark
			Table 2			
			(1) Mount the sample in regular attachment position on vibration test table and vibrate up and down. (2) The time reguires for one reciprocation between maximum vibration and minimum vibration shall be about 1 min. 4-9-2 Vibration resistance test (B) Test shall be performed according to KS R 1034 (vibration test method for automobile parts).	NO irregularities such as destroy looseness of respective elements.	B	

Vibration Frequency	Accelera-tion	Test Time		Total Time
20~25Hz	1g	26H	30H	30H : 40M
	2	3	50	
	3		20	
	1	44	00	
50~100Hz	1	44	00	50H : 50M
	2	6	20	
	3		30	
100~150Hz	1	16	30	19H : 10M
	2	2	30	
	3		10	

Table 1

Test Item, Method, Judgement Standard and Quality Rank

Test Classif-ication	No.	Test Item	Test Condition and Method	Judgement Standard	Quality Rank	Remark
Basic Performance	4-1	Stroke	Measure following stroke. (1) The stroke from free condition to light off position (2) Whole stroke	Within the instructed limits of specification or drawing.	B	
	4-2	Play	Measure the Push Rod play of operating direction at free conditions.	Play should be under 0.3 mm at full breadth.	C	
	4-3	Manipulation strength	Measure following load . The load required to swtch ON ➔ OFF.	Sliding contact; 1.3±0.5kg coupling contact (reverse rotating type); 1.2±0.6 kg. However, the variations after test should be within ±40% of the value before test.	B	
	4-4	Terminal intensity	(1) For terminals not located in Fender postion. Add 8 kg of tensile load per one terminal for 1 min to linear direction. (2) For terminals located in Fender portion. Add 8 kg to linear direction and 4kg to rectangular direction respectively per one lead wire for 1 min.	No harmful damage and looseness at soldered portion and fringes. As for the clamp, there shall be no harmful looseness owing to tangling of cords at clamping metal elements.	C	