Automatic Door Operating Unit Durability Test Report

(VS-150 Door Operating Unit)

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1. Scope of application

1-1. This report describes the results of performance and durability of automatic door operating unit.

1-2. Conformation

1-2-1. This report is made based on the clause of automatic door operating unit for sliding door prescribed in Item 16-8 of "Common specification of building construction 2016", compiled under the supervision of building and repairs department of government office of secretariat of Ministry of Land, Infrastructure and Transportation and published by Public Building Association.

1-2-2. Testing method of automatic door operating unit refers to JIS A1551.
(Testing method of automatic door operating unit)

2. Performance

2-1. Automatic door operating for sliding door (Confirming following items)

Items		Performance		Results
Performance item	Operation	Single slide	Bi-parting	
	Door Weight	150KG x 1 (150KG)	150KG x 2 (300KG)	
Closing force (N)		Under 190	Under 250	OK
Operating speed	Open(mm/S)	No more than 500		OK
	Close(mm/S)	No more than 350		OK
Manual opening force (N)		No more than 100		OK
Distance of reversing (mm)		No more than 250		OK
Insurance resistance (MΩ)		No less than 10MΩ (100VAC circuit at 500VDCMega)		OK
Endurance voltage		Shall resist on applying 1000VAC (100VAC circuit)		OK
Temperature increase		No less than 1MΩ, within the permissible maximum temperature after 500 thousand cycle		OK
Repeating door operation		Shall have no problem on running, etc. not less than 500 thousand cycle		OK

2-2. Testing Method

(a). Testing method of closing force shall refer to open/close force test of JIS A1551 7.1

(b). Testing method of open/close speed shall refer to open/close speed test of JIS A1551 7.2.

(c). Testing method of manual open force shall refer to manual open force test of JIS A1551 7.3.

(d). Testing method of distance for reversing shall refer to distance for reversing test of JIS A1551 7.4.

(e). Testing method of insulation resistance shall refer to insulation resistance test of JIS A1551 7.8.

(f). Testing method of endurance voltage shall refer to endurance voltage test of JIS A1551 7.10.

(g). Testing method of temperature increasing shall refer to temperature increasing test of JIS A1551 7.11.

(h). Testing method of repeating door operation shall refer to repeating door operation test of JIS A1551 7.12.

Note) 1. On endurance voltage test, circuit of thunder serge measure may be taken out.

2. On temperature increasing test, temperature shall be measured at highest temperature area around motor.

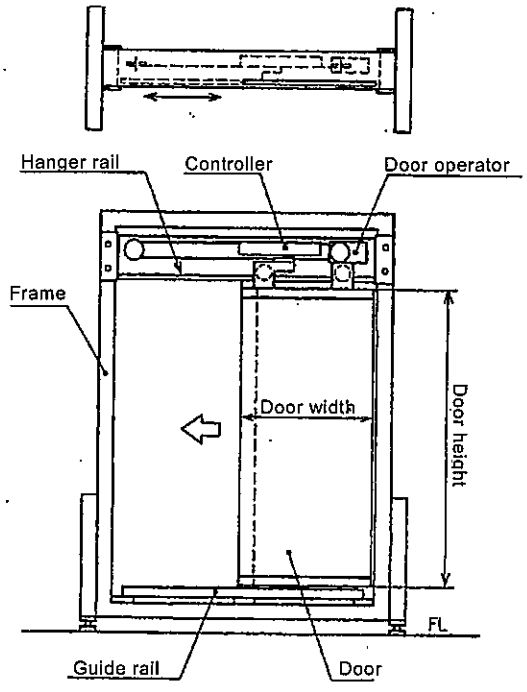
3. Result of evaluation

1). Testing method of closing force (JIS A 1551 7.1)

Mount door operating unit to testing door set and confirm the door open/close operation manually.

Then, by using door operating unit, operate open/close continuously for twenty times and confirm that door is operating without problem.

After the confirmation of door operation, confirm the closing force by pushing the pushpull gauge toward opening direction at ±100mm area from middle of door stroke width and at height of 1200±50mm from the bottom of the door.



2). Testing Method of open/close speed (JIS A 1551 7.2)

Measure the time t(s) of door operation from starting its operation at fully-closed position until the door comes to opening width become 600mm.

During this test, recognition of position shall be made as follows:

Prepare the vertical line to door surface, 50 mm from door edge at fully-closed position. Measure the time taken for this line to move 600 mm from the start of door open operation. Then calculate the door open speed from following calculation. Also, calculate closing speed from following calculation.

$$\text{Open Speed} = \frac{600}{t}\ \text{(mm/s)}, \qquad \text{Closing Speed} = \frac{600}{t}\ \text{(mm/s)}$$

3). Testing method of manual opening force (JIS A 1551 7.3)

By using testing equipment, confirm the door open/close operation manually. Then without running electricity, at the edge of door, which is stopping at any position, put pushpull gauge at the height of 1200±50mm from the bottom of the door and measure the force (F) which door starts moving by slowly pushing the door.

4). Testing method of distance for reversing (JIS A 1551 7.4)

By using testing equipment, operate open/close continuously for twenty times and confirm that door is operating without problem.

During the close operation, measure the door running distance (such as by inertia) from where door receives open signal to where door actually reverses.

5). Testing method of insulation resistance (JIS A 1551 7.8)

By using testing equipment, measure the insulation resistance of power line of door operating unit and door operating unit mounting plate by using 500VDC insulation resistance tester prescribed in JIS C1302 and by the method prescribed in JIS C0703 5.2 (Insulation resistance test).

・Guiding principle of application of JIS C0703 (Part)

※ Value over 10MΩ to 100MΩ

··· Applies to determine appropriate insulation resistance to substitute material provisions of insulation material such as molding product.

★ Displace JIS C0703 5.2 to JIS C0704 7.2 (Revised due to addenda No.1 in 2009)

★ Displace JIS C0704 7.2 to JIS C9730-1 13.1 (Revised due to addenda No. 2 in 2014)

6). Testing method of endurance voltage (JIS A 1551 7.10)

Endurance voltage test of the operator shall be made by the testing equipment according to JIS C0703 5.3 (AC withstand voltage test)

・Guiding principle of application of JIS C0703 (Part)

※1000V··· applies to the circuit over 30V to 150V

★ Displace JIS C0703 5.3 to JIS C9335-1 13. (Revised due to addenda No.1 in 2009)

★ Displace JIS C9335-1 13. to JIS C9335-1 article 13 (Revised due to addenda No. 2 in 2014)

7). Testing method of temperature increasing (JIS A 1551 7.11)

By using testing method, measure the temperature and ambient temperature and calculate the temperature rise value (℃) with the temperature gauge attached to the highest area on the available surface of the motor and other parts when the temperature rises up to the saturation state or the safety device activates after the same operations as repeating door operation with the rated voltage of the rated frequency on the operator.

Measure the insulation resistance of the above-mentioned parts soon after measuring the temperature.

Permissible maximum temperature is based on JIS C4003 3 (Permissible maximum temperature of each insulation.)

(Kind of insulation;H, Applicable maximum temperature; 180℃)

8). Testing method of repeating door operation (JIS A 1551 7.12)

By using testing equipment, confirm whether or not there is a problem on running, etc.

This test shall be conducted after 500 thousand cycle (more than 4 cycle per minute) with the rated voltage of the rated frequency on the operator.