

Test Report No. 7191039503-MEC13-02-DL
dated 8 Feb 2013



FSE Singapore

Note: This report is issued subject to the Testing and Certification Regulations of the TÜV SÜD Group and the General Terms and Conditions of Business of TÜV SÜD PSE Pte Ltd. In addition, this report is governed by the terms set out within this report.

SUBJECT: Durability test of shower hinge.
TESTED FOR: CKS Glass Hardware Sdn Bhd (803232-H)
No. 37, Jalan Tembaga SD5/2G
Bandar Sri Damansara
52200 Kuala Lumpur, Malaysia
Tel: 603-6274 6599
Fax: 603-6275 8199

Choose certainty.
Add value.

SAMPLE DESCRIPTION: Two pieces of shower hinges was received on 16 Jun 2012. Two pieces of shower hinges is installed onto the door test-rig for test. The shower hinges is described as follows:
Brand name: CKS
Model no: CKS-301 (glass to wall, 90°)
Material: Solid Brass
Finishing: Bright Chrome Plated

TECHNICAL DETAILS: 1) Self-closing function when door stays within 25 degree of opening
2) Suitable for 8 mm to 10 mm door thickness
3) Maximum door weight 45 kg per 2 hinges.

METHOD OF TEST: Adopted from BS EN 1935: 2002 Building hardware – single leaf hinges – Requirements and test methods Clause 5.4 (Requirements) and Clause 7.5 (test method)

TEST SEQUENCE: Clause 7.5 – Durability test

1) At 20 and 60,000 cycles - measure and record the torque required to initiate movement of the hinged leaf at operating angles of 0° ± 5°, 30° ± 5°, 60° ± 5° and 90° ± 5°.
2) At 20 and 60,000 cycles - measure and record the initial horizontal and vertical gaps between the hinged element and the datum surfaces.

DATE OF TEST: 12 Nov 2012

David Li
David Li
Associate Engineer

Ong Khay Bang
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Engineer
Building
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TEST RESULTS:

Date of test: 12 Nov 2012
Door width: 750 mm
Door weight: 45 kg
Glass door thickness: 10 mm

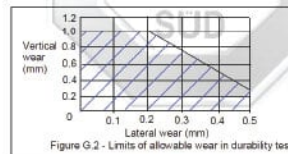
The door used was design according to client's details as given.

1) Torque to initiate movement of the hinged leaf

Door opening	Torque measurement (Nm)	
	Initial at 20 cycles	After 60,000 cycles
0° ± 5°	3.7	2.9
30° ± 5°	8.8	7.4
60° ± 5°	4.4	5.9
90° ± 5°	5.2	4.4

2) Measurement of horizontal and vertical gaps

	Initial at 20 cycles (mm)	After 60,000 cycles (mm)	Wear measurement (mm)	Results	BS EN 1935: 2002 Clause 5.4 (Requirements)
Horizontal gap	176.06	176.35	0.29	Passed up to 60,000 cycles.	The amounts of lateral and vertical wear of the hinge tested measured as displacements of the datum surfaces shall be within the shaded area as shown in Figure G.2
Vertical gap	282.58	283.25	0.67		



3) Self-closing functionality test

Test	Initial at 20 cycles	60,000 cycles	Company's Requirement
Self-closing function within 25 degree of opening	operable	operable	Self-closing function shall remain operable when door stays within 25 degree of opening.

Remarks: 1) Door was able to perform self-closing function up to 60,000 cycles.
2) The horizontal & vertical wear maintain within specification up to 60,000 cycles.
3) The shower hinge passed the endurance test up to 60,000 cycles.

David Li
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Associate Engineer

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Test Report No. 7191106914-MEC15-DL
dated 13 Mar 2015



FSE Singapore

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SUBJECT: Endurance test (100,000 cycles) of CKS-SL890 top hanging sliding glass door system.
TESTED FOR: CKS Glass Hardware Sdn Bhd
No. 37, Jalan Tembaga SD5/2G
Bandar Sri Damansara
52200 Kuala Lumpur
Malaysia
Attn: Ms. Hedy Loh

Choose certainty.
Add value.

TEST METHOD: Endurance test (100,000 cycles): The suspended glass door was subjected to 100,000 cycles of opening and closing operation (sliding to and fro), at the rate of 4 cycles per minute. The system was inspected after 100,000 cycles to examine for any obvious damage on the door rollers.

Test requirement: Adopted from SS 268: 1983 Specification for aluminium framed sliding glass doors Appendix A - Clause A.4 - Test 4 - Ease of sliding

SAMPLE DESCRIPTION: One unit of top hanging frameless glass door system comprising of one glass door panel was installed onto the test rig for endurance test. The glass door was suspended by a top hanging track and two pieces of carriage rollers affixed to the top of the glass door.

Model of door roller: CKS-SL890
Size of glass door: 1200 mm (W) x 2700 mm (H) x 12 mm (Thk)
Weight of glass door panel: 97 kg

DATE OF SAMPLE SUBMITTED: 5 Feb 2015

DATE OF TEST: 11 Feb 2015

DRAWING SUBMITTED: 2 sheets of sliding glass door drawing
1 sheet of door roller drawing



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TEST RESULTS:

Endurance test (100,000 cycles)

Test	Number of cycles										
	Initial	10,000	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000
Observation	No visual damage was observed.										
Force to initiate movement (N)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Ease of movement of sash (N)	3.9	3.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Force to movement (N)	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
SS 268: 1983 Requirements	No visual damage to the roller / sash shall be observed.										
	≤ 120N										
	≤ 80N										

Results: Passed.
Remarks: (1) No visual damage was observed on the CKS-SL890 door rollers after 100,000 cycles of endurance test. (See Figure 4.8 & 5 on page 7 & 8)
(2) The CKS-SL890 top hanging sliding door system was able to operate (slide to and fro) normally after the 100,000 cycles of endurance test.

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