Q-railing Technical Report

Testing: Uniformly distributed load and point load on the infill glass

UK

Testing conducted by/at:
Q-railing Europe GmbH & Co. KG
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Table of Contents

1. Introduction 3
2. Test arrangement 3
3. Materials 3
4 . Arrangement of test assembly: 4
5. Test results 7

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1. Introduction

This report describes tests conducted at the test site of Q-railing Europe GmbH & Co.KG different types of glass clamps mounted on different post systems with different infill glass, from Q-railing's catalogue, assembled as shown in this report.

The tests were done according to BS 6180 and BS EN 1991-1-1

2. Test arrangement

Various barrier specimens were mounted on to a rigid concrete structure with a test rig from steel with sufficient strength to withstand the loads applied to it. The point load to the center of the glass panel and the uniformly distributed load to the glass infill.

The UDL was applied on the glass by means of using salt bags which weigh 10 kg each. Mechanical indicators were used to measure the deflection of the glass from its neutral position.

3. Materials

Balusters

- Round post, art.nr. 14.0914.248.12, top mount.
- Round post, art.nr. 14.0914.242.12, top mount.
- Square line post 60x30 art.nr 14.4901.063.12

Glass

- Laminated toughened glass has been tested with a PVB film with thickness of 0.76 mm. As alternative also PVB film thickness of 1.52 may be used.
- Monolithic glass heat toughened.
- See the results table for the glass dimension.

Glass clamps

- Glass clamps Mod 22, 24, 28 and 42

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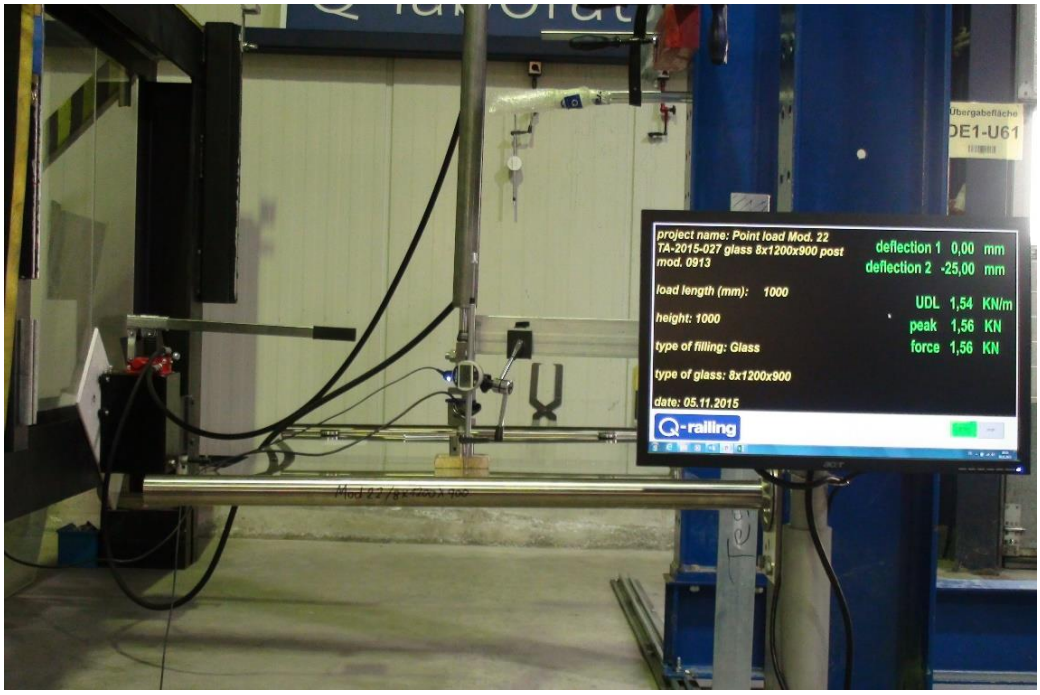
4 . Arrangement of test assembly:

Point load



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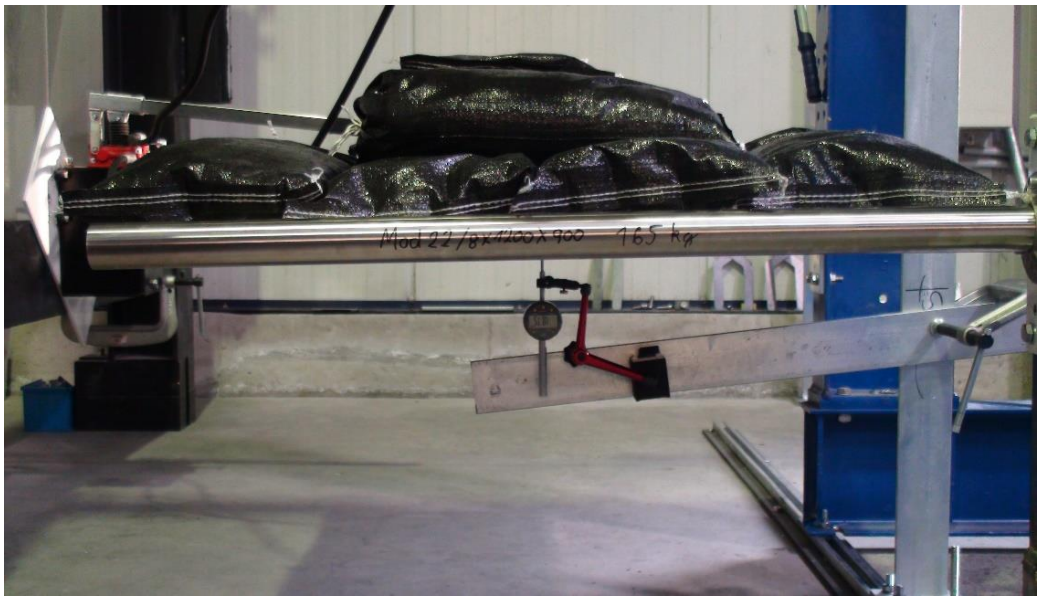
Uniformly distributed load



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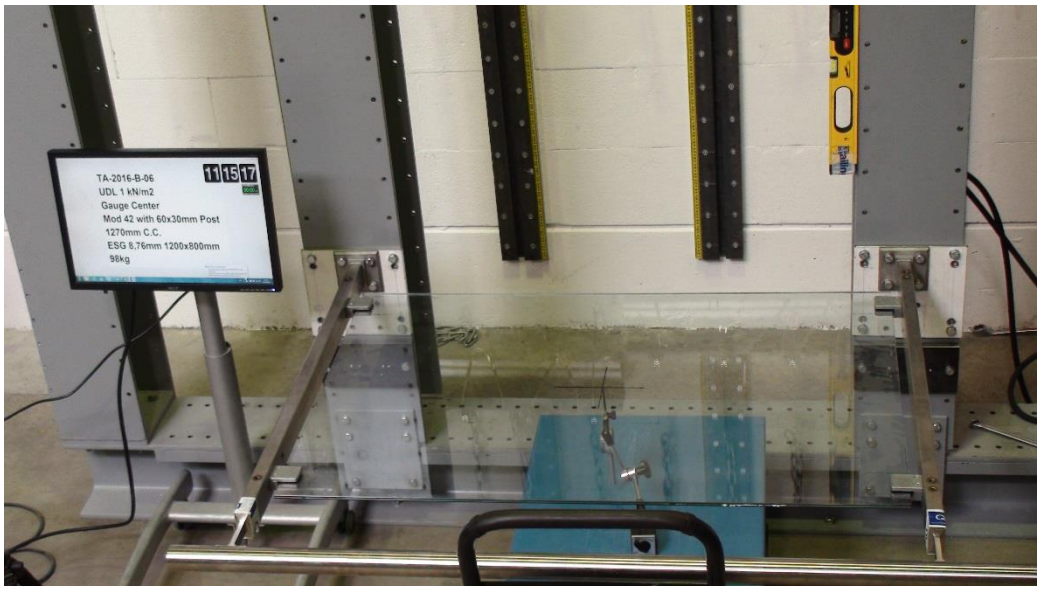

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5. Test results

The following results are for Q-line post system 48.3 x2.0 mm

Glass clamp	Glass dimension	Post C/C distance	Glass Type	Imposed Load at 25 mm Deflection		Light Residential & Offices activities (i) (iv)	Residential & Offices activities (ii) (v) (viii) (ix)	Congregations & Overcrowded areas (vi) (vii) (x) (xiii) (xiv)
				UDL in kN/m²	Point load in kN	0.5 / 0.25	1.0 / 0.5	1.5 /1.5
Mod 22	1.4 x 0.9 m	1.48 m	8 mm Tempered Monolithic	1.24	1.06	✓	✓	X
Mod 22	1.2 x 0.9 m	1.28 m	8 mm Tempered Monolithic	2.00	1.56	✓	✓	✓
Mod 22	1.5 x 0.9 m	1.58 m	10 mm Tempered Monolithic	1.89	1.83	✓	✓	x
Mod 28	1.2 x 0.9 m	1.28 m	8 mm Tempered Monolithic	2.20	1.62	✓	✓	✓
Mod 28	1.5 x 0.9 m	1.58 m	10 mm Tempered Monolithic	1.80	1.59	✓	✓	X
Mod 28	1.8 x 0.8 m	1.88 m	12 mm Tempered Monolithic	1.40	1.44	✓	✓	X
Mod 28	1.2 x 0.9 m	1.28 m	12.76mm Laminated Toughened	3.37	2.5	✓	✓	✓
Mod 42	1.2 x 0.9 m	1.28 m	8 mm Tempered Monolithic	2.16	1.59	✓	✓	✓
Mod 42	1.5 x 0.9 m	1.58 m	10mm Tempered Monolithic	1.73	1.58	✓	✓	X
Mod 42	1.4 x 0.9 m	1.48 m	8.76mm Laminated Toughened	1.28	1.21	✓	✓	X
Mod 42	1.2 x 0.9 m	1.28 m	8.76mm Laminated Toughened	2.07	1.66	✓	✓	✓
Mod 42	1.8 x 0.8 m	1.88 m	12 mm Tempered Monolithic	1.44	1.45	✓	✓	X
Mod 42	1.2 x 0.9 m	1.28 m	12.76mm Laminated Toughened	3.88	2.5	✓	✓	✓
Mod 24	1.8 x 0.8 m	1.88 m	12 mm Tempered Monolithic	1.41	1.45	✓	✓	X
Mod 24	1.2 x 0.9 m	1.28 m	12.76mm Laminated Toughened	5,12	2.5	✓	✓	✓

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The following results are for square-line 60x30 mm system.

Glass clamp	Glass dimension	Post C/C distance	Glass Type	Imposed Load at 25 mm Deflection		Light Residential & Offices activities (i) (iv)	Residential & Offices activities (ii) (v) (viii) (ix)	Congregations & Overcrowded areas (vi) (vii) (x) (xiii) (xiv)
				UDL in kN/m²	Point load in kN	0.5 / 0.25	1.0 / 0.5	1.5 /1.5
Mod 42	1.5 x 0.8 m	1.57 m	8.76 mm Laminated Toughened	1.08	1.03	✓	✓	X
Mod 42	1.2 x 0.8 m	1.27 m	8.76 mm Laminated Toughened	1.76	1.56	✓	✓	✓
Mod 42	1.5 x 0.8 m	1.57 m	10.76 mm Laminated Toughened	1.66	1.6	✓	✓	x
Mod 42	1.5 x 0.9 m	1.57 m	8 mm Tempered Monolithic	1.22	1.2	✓	✓	x
Mod 42	1.6 x 0.9 m	1.67 m	10 mm Tempered Monolithic	1.67	1.4	✓	✓	X

The following results are for Q-line post system 42.4 x2 mm

Glass clamp	Glass dimension	Post C/C distance	Glass Type	Imposed Load at 25 mm Deflection		Light Residential & Offices activities (i) (iv)	Residential & Offices activities (ii) (v) (viii) (ix)	Congregations & Overcrowded areas (vi) (vii) (x) (xiii) (xiv)
				UDL in kN/m²	Point load in kN	0.5 / 0.25	1.0 / 0.5	1.5 /1.5
Mod 42	1.2 x 0.8 m	1.27 m	8.76 mm Laminated Toughened	1.31	1.23	✓	✓	X

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