REPORT

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Page
1 (4)

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Frontal Impact test of a Flexxy hundbur medium dog crate according to ECE Regulation No. 17

(3 appendices)

Summary

Frontal crash test of a dog crate has been performed according to the ECE Regulation No. 17 Rev.5, deceleration pulse.

The Flexxy hundbur medium loaded with a 25 kg dog dummy was placed in front of a simulated rear seat back. The dog crate was mounted with four lashing straps directly onto the rigid sled. The crash test was performed in the vehicle's direction of forward travelling at 48,9 km/h, approximately ≥ 20 g pulse and a 30 ms duration.

Some permanent deformations occurred in the rear part of the dog crate during the test, but did not increase the risk of injury in the event of a collision. The prescribed load was sustained inside the dog crate during the test and the front gate remained closed and was possible to open and evacuate after the test.

1. Introduction

RISE Research Institutes of Sweden AB has on assignment of Bioberga AB performed a crash test of a Flexxy hundbur medium dog crate according to ECE Regulation No. 17 Rev.5, deceleration pulse. The purpose of the test was to evaluate the strength of the dog crate and the lashing straps systems.

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2. Test object

Tested product:	Flexxy hundbur medium
Lashing strap:	Spännrem JQ 25 mm
Test direction:	Forward impact, X+ with the dog crate gate facing backward.
Test object weight:	11,9 kg (measured by RISE)
Test object dimensions:	778×478×658 mm (L W H)
Dog dummy weight:	25 kg (measured by RISE)
Dog dummy dimensions:	Approximately 470×350×180 mm (L W H measured by RISE)
Test rig:	The dog crate was mounted directly onto the sled.
Test object arrival at RISE:	2021-08-12
Selection of test objects:	The test objects have been selected by the client without RISE's assistance.

3. Test method and performance

Test method:	Deceleration pulse according to the ECE Regulation No. 17 Rev.5.
Test date:	2021-08-12
Test facility:	RISE – Materials and Production – Applied Mechanics crash laboratory in Borås.
Ambient temperature:	21,5 °C RISE inv. no: 403553
Crash pulse:	≥ 20 g for 30 ms.
Pulse measurement:	Two accelerometers mounted on the sled, the graph can be found in appendix 1. RISE inv. nos: BX42667 and BX42669
Velocity measurement:	Optical sensors measuring the time for the sled to travel a distance of 0,5 meters just before impact. RISE inv. no: 900081
Film camera:	Photron Fast cam SA4, 1000 frames per second, with a Tamron SP- AF/28-75mm-F/28 *XR Di* lens.
Photographs:	Photos were taken before and after the test and can be found in appendix 2.

The test object was mounted in front of a simulated rear seat back with four lashing straps directly onto the rigid sled, with the dog crate gate facing backward by the client, see photo 1.



Photo 1 Test setup

The 25 kg dog dummy provided by RISE was placed 50 mm above the floor, see photo 2.



Photo 2 Dog dummy

4. Test results

The sled was accelerated to a speed of 48,9 km/h before impact.
Some permanent deformations occurred in the rear part of the dog crate during the test, but did not increase the risk of injury in the event of a collision. The prescribed load was sustained inside the dog crate during the test and the front gate remained closed and was possible to open and evacuate after the test.

The test results shown in this report refer only to the tested objects.

5. Measurement uncertainty

The measurement uncertainty for the deceleration pulse is less than 1,5 %.
Reported uncertainty corresponds to an approximate 95 % confidence interval around the measured value. The interval has been calculated in accordance with EA-4/16 (EA guidelines on the expression of uncertainty in quantitative testing), which is normally accomplished by quadratic addition of the actual standard uncertainties and multiplication of the resulting combined standard uncertainty by the coverage factor k=2.

Department Applied Mechanics, RISE AB - Transport and Product Safety

Performed by

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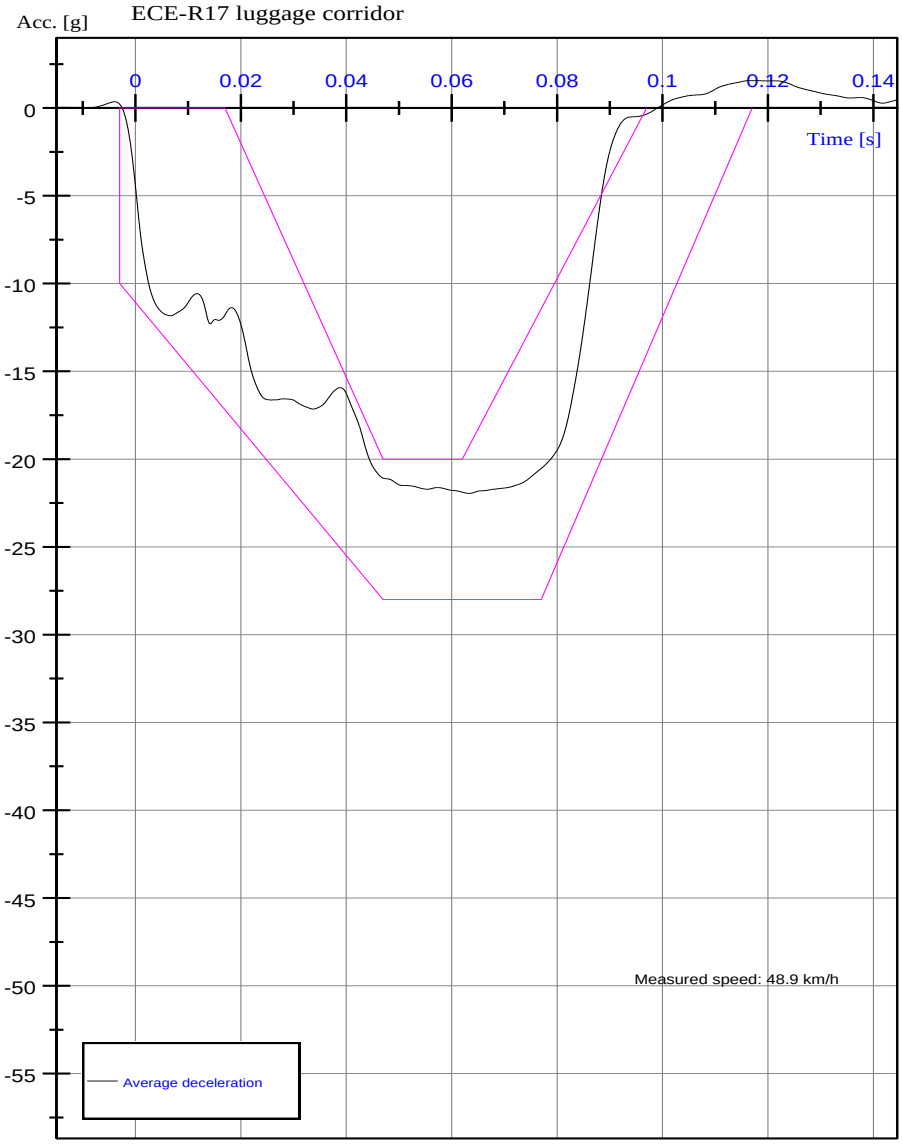
Anna Ehn

Appendices

Appendix 1	Deceleration graph (1 page)
Appendix 2	Photos (page 1-4)
Appendix 3	Sketch with dimensions (page 1)
	Material Analysis lashing strap (page 2)

Appendix 1

Sled deceleration, Average pulse, CFC 60



Customer:	Bioberga AB
Test object:	Flexxy hundbur medium, 25 kg
Standard:	ECE R17
Test date:	2021-08-12 **Test:** 3

Appendix 2



Photo 1. Before test



Photo 2. Before test

Appendix 2



Photo 3. Before test

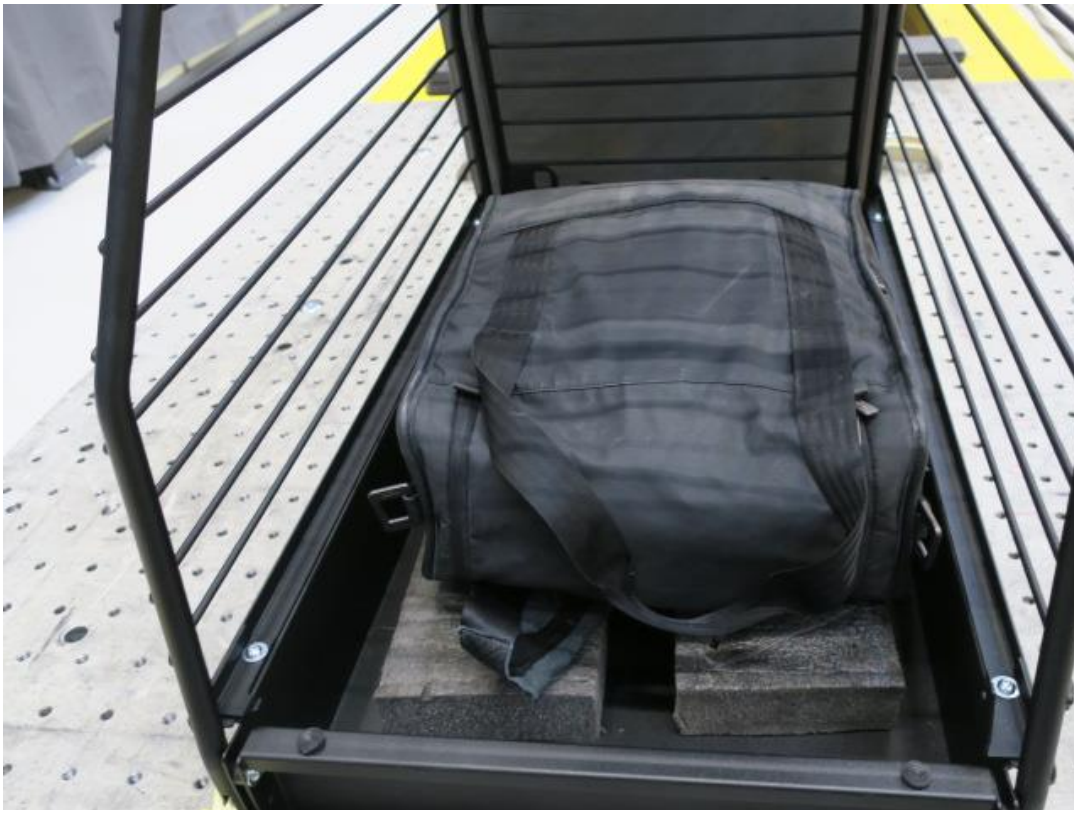


Photo 4. Before test

Appendix 2

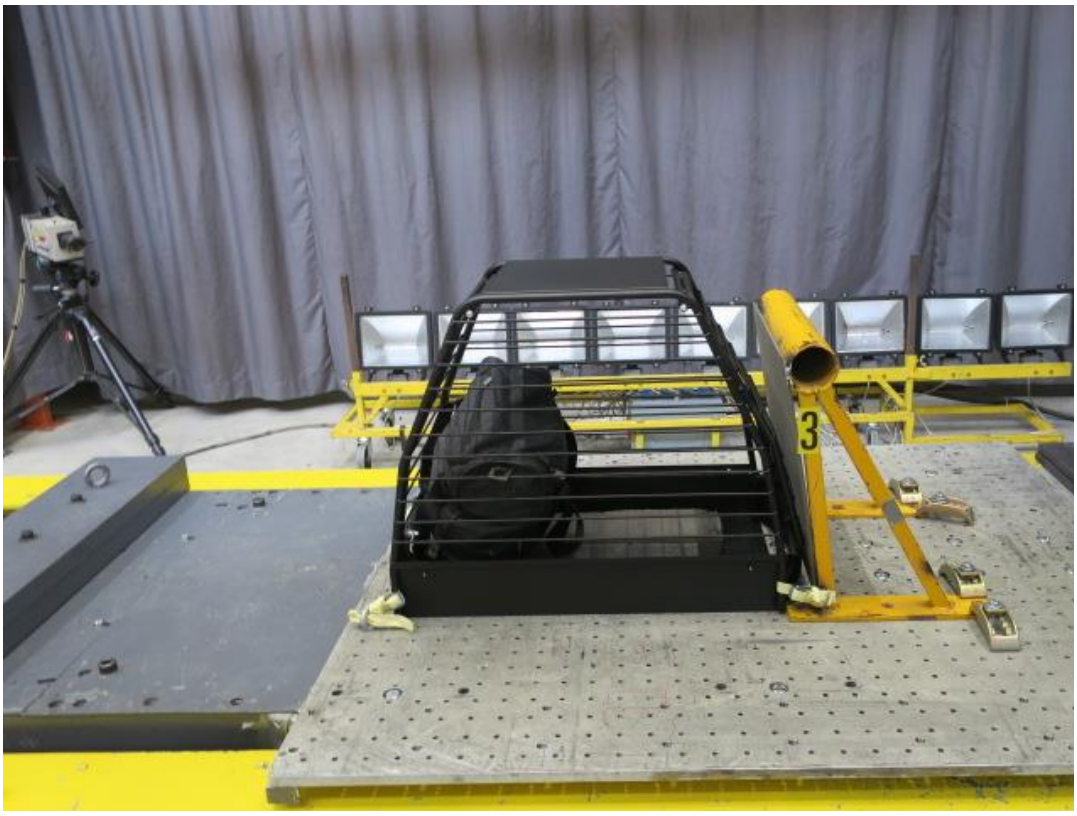


Photo 5. After test

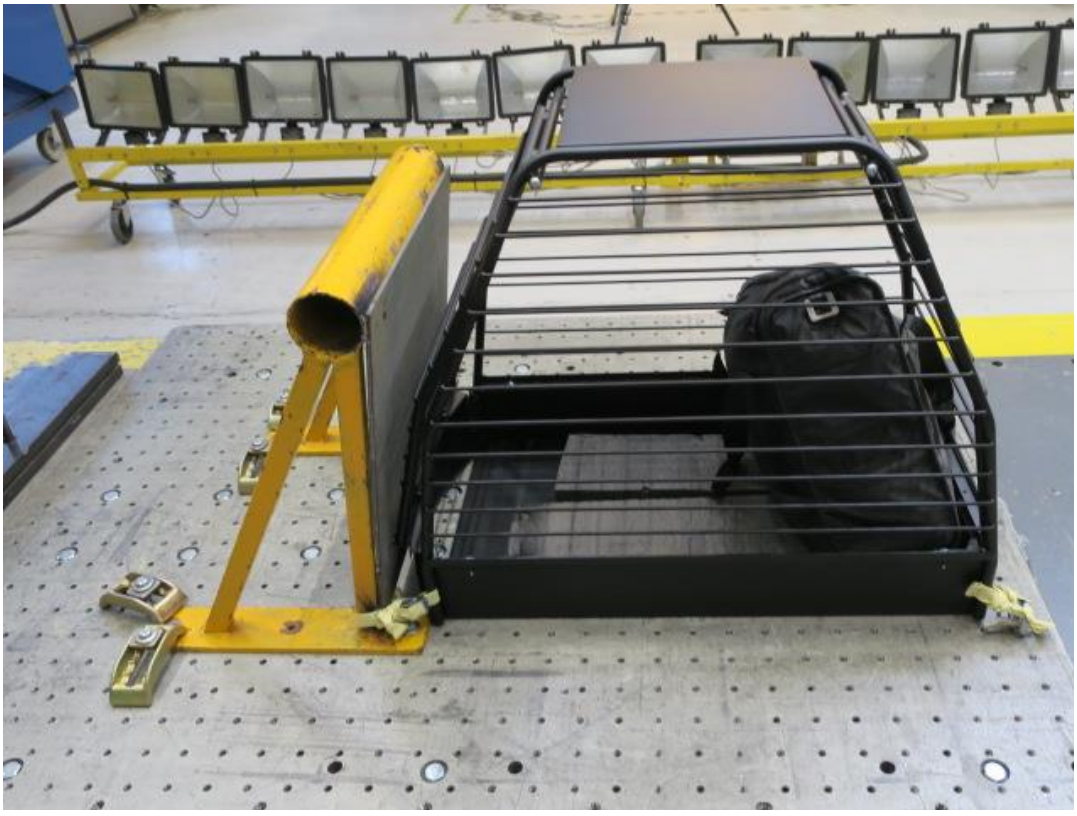


Photo 6. After test

Appendix 2

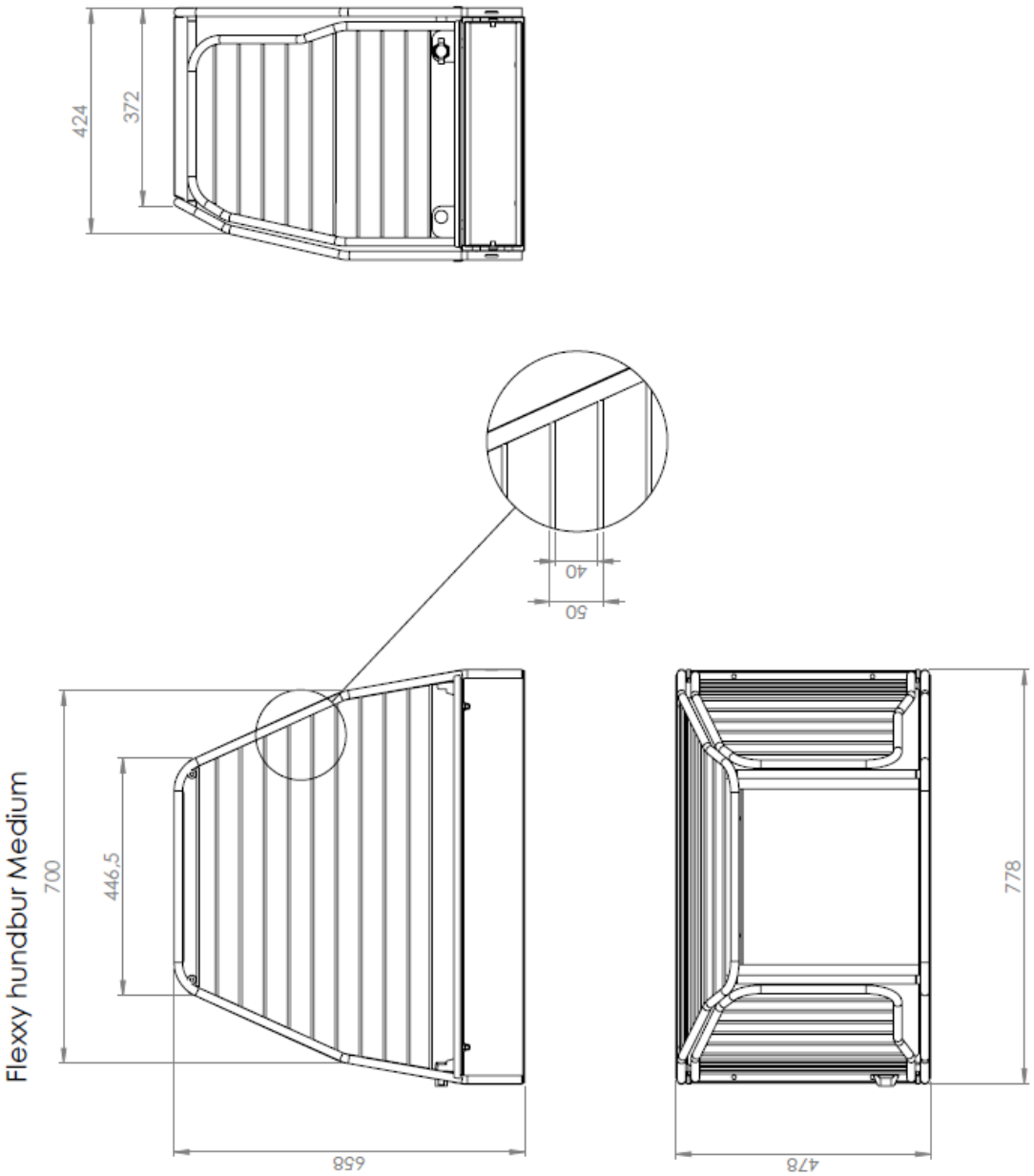


Photo 7. After test



Photo 8. After test

Appendix 3



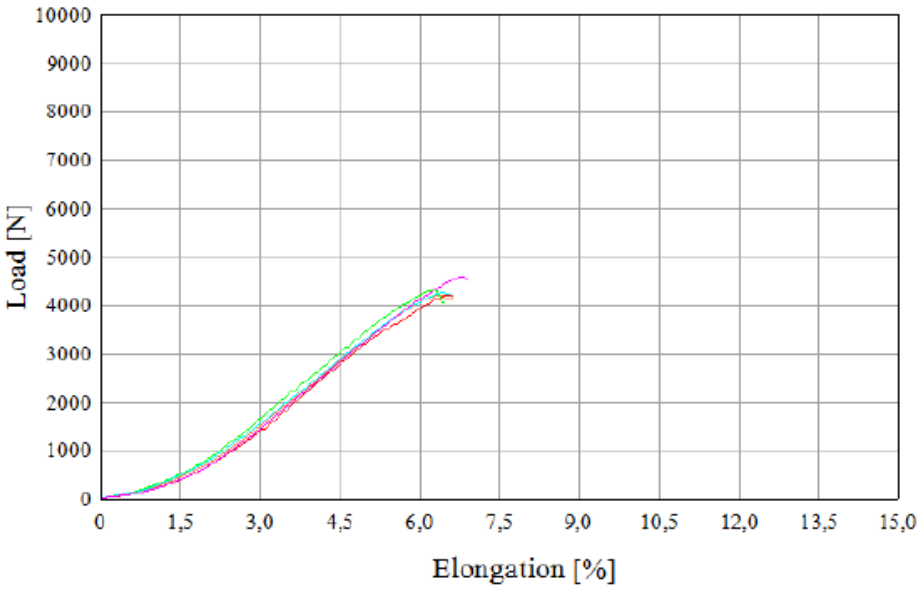
Appendix 3

ARNO

Material - Analysis

Report
Tensile Test - Maximum Load & Elongation

Product Code	: JQ25-SURRNINGSSTYRKA	Load Range	: 10000,00 N
Batch Reference	: AK25BL	Elongation Range	: 15,00 %
Date	: 08.12.2020	Test Speed	: 300,00 mm/min
Operator	: HB	Initial Lenght L_0	: 300,00 mm
Temperature °C	: 20	End at ? % from F_M	: 25,00 %
		Preload	: 30,00 N



No	F_M N	ε_B %	Remark
1	4212,80	6,68	
2	4319,80	6,52	
3	4264,80	6,68	Buckle
4	4213,10	6,69	
5	4596,00	6,96	
Mean	4321,30	6,70	
Std.Dev.	159,79	0,16	