Test Report

Bicycle / E-Bike Frame

EFBE Sample No. 208249

Customer:

't Mannetje, Spaarnwouderstraat 3, NL-2011AA Haarlem

Sample Data:

Description:	Cargo Bike Frame - Trike
Brand – Model:	't Mannetje – Rover
Category:	Cargo
Frame No. / ID:	--
Weight:	25 620 g (+/- 50 g) including hardware, excluding through-axle
ST length / size:	540 mm (C/T), Uni
Sampling Method:	n/a, sample frame provided by customer
Date of Receipt:	2020-06-19
Remarks:	The frame was tested for a total weight of 350 kg.
	The horizontal forces fatigue tests were carried out with reduced test forces as per customer request, simulating brake decelerations of 4.5 m/s^2 (1 450 N) and 5.1 m/s^2 (1 700 N) respectively.

Summary:

The frame was tested according to the DIN 79010:2020-02 and EFBE TRI-TEST® for Cargo bikes with the following test stages:

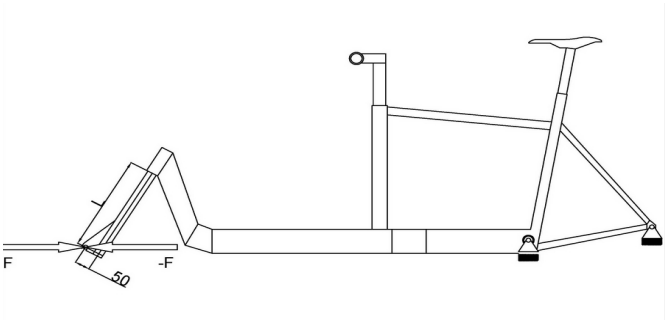
Test Stage	Type of Test	Result
5.9.4	Horizontal Forces Fatigue Test - 1 450 N	passed
5.9.4	Horizontal Forces Fatigue Test - 1 700 N	passed
5.9.6.2	Payload Vertical Forces Fatigue Test - rear loading area	passed
5.9.6.2	Payload Vertical Forces Fatigue Test - front loading area	passed

The requirements for Cargo bikes were met.

The test was passed.

Test Sequence in Detail:

5.9.4 – Horizontal Forces Fatigue Test - 1 450 N

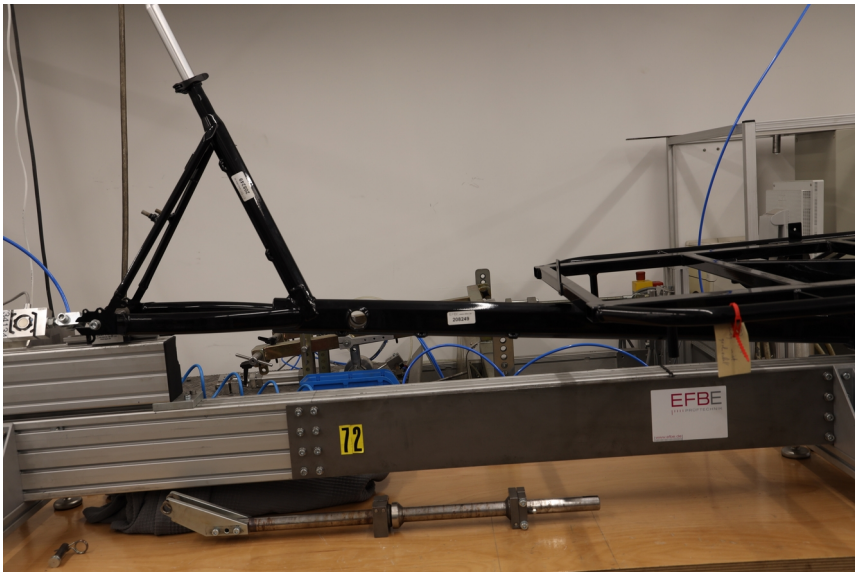


Number of load cycles: 100 000

Dynamic test force F: 1 450 N

Standard deviation of test forces < 10 N, mean value +/- 5 N. Frequency < 10 Hz.

The requirements are in line with DIN 79010:2020-02, 5.9.2 for Cargo bikes. The test method is similar to the one defined in DIN 79010:2020-02, 5.9.4. The test forces were adapted to the total weight of the bike.



(Picture 1 – sample frame during test)

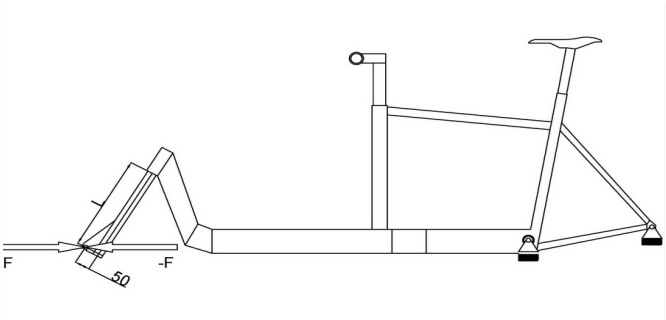
Result:

After completion of 100 000 cycles, no visible crack or fracture was observed.

The test was passed.

Date of test execution: 2020-06-25

5.9.4 – Horizontal Forces Fatigue Test - 1 700 N

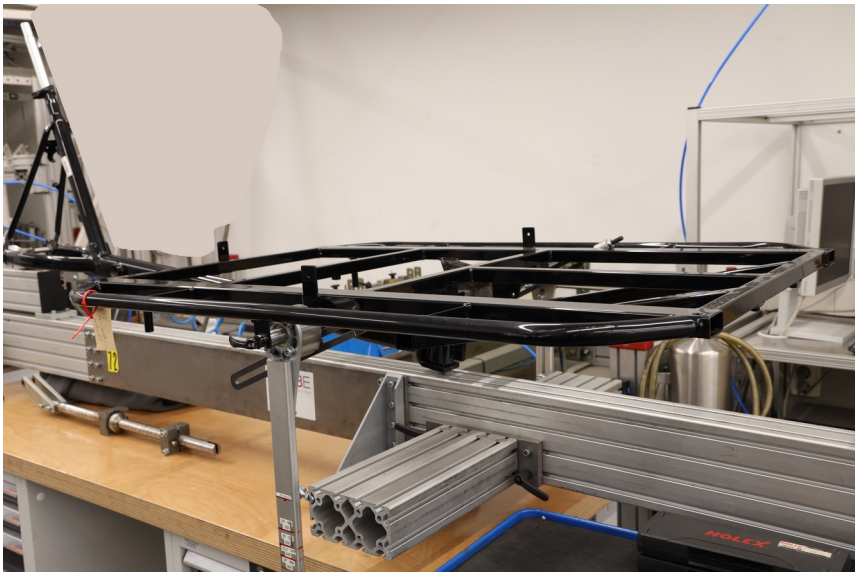


Number of load cycles: 100 000

Dynamic test force F: 1 700 N

Standard deviation of test forces < 10 N, mean value +/- 5 N. Frequency < 10 Hz.

The requirements are in line with DIN 79010:2020-02, 5.9.2 for Cargo bikes. The test method is similar to the one defined in DIN 79010:2020-02, 5.9.4. The test forces were adapted to the total weight of the bike.



(Picture 2 – sample frame during test)

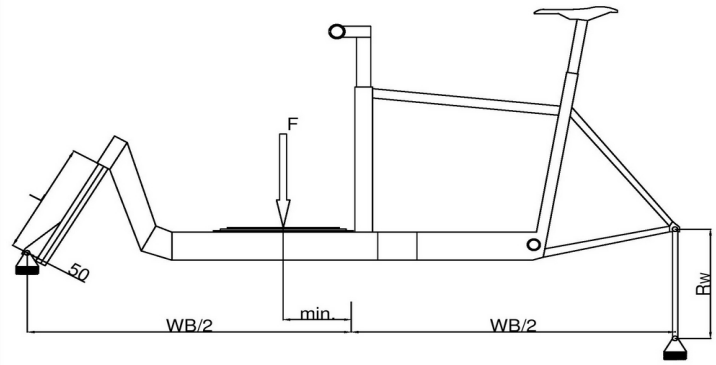
Result:

After completion of 100 000 cycles, no visible crack or fracture was observed.

The test was passed.

Date of test execution: 2020-07-02

5.9.6.2 – Payload Vertical Forces Fatigue Test – rear loading area

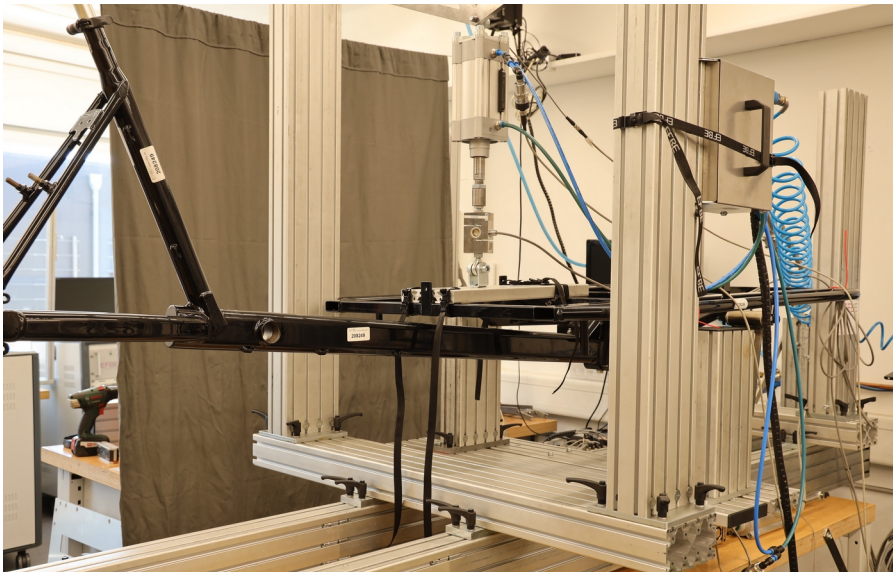


Number of load cycles: 100 000

Dynamic test force F: 2 210 N

Standard deviation of test forces < 10 N, mean value +/- 5 N. Frequency < 10 Hz.

The frame was tested according to DIN 79010:2020-02, 5.9.6.2 with 100 000 cycles of a dynamic test force F of 2 210 N, which was determined as 1.5 the maximum payload of 150 kg in the cargo area, multiplied with the gravitational acceleration g of 9.81 m/s².



(Picture 3 – sample frame during test)

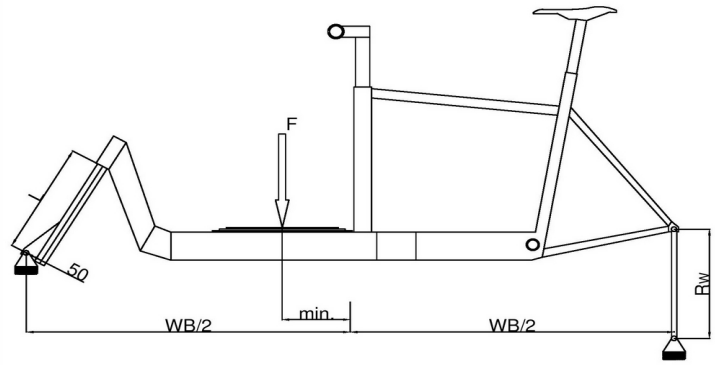
Result:

During the test execution, the loading area got in contact with the frame.
After completion of 100 000 cycles, no visible crack or fracture was observed.

The test was passed.

Date of test execution: 2020-06-26

5.9.6.2 – Payload Vertical Forces Fatigue Test – front loading area

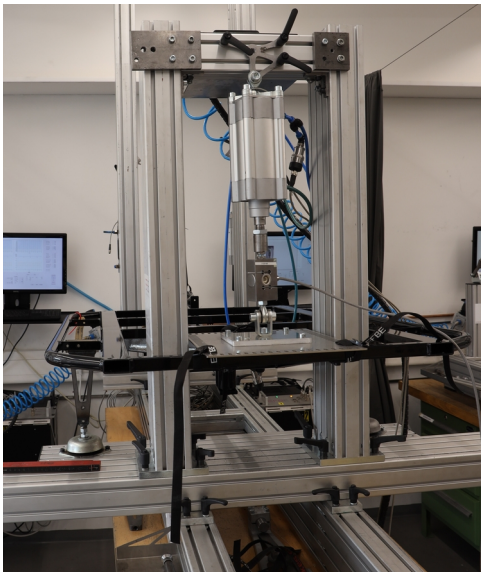


Number of load cycles: 100 000

Dynamic test force F: 2 210 N

Standard deviation of test forces < 10 N, mean value +/- 5 N. Frequency < 10 Hz.

The frame was tested according to DIN 79010:2020-02, 5.9.6.2 with 100 000 cycles of a dynamic test force F of 2 210 N, which was determined as 1.5 the maximum payload of 150 kg in the cargo area, multiplied with the gravitational acceleration g of 9.81 m/s².



(Picture 4 – sample frame during test)

Result:

After completion of 100 000 cycles, no visible crack or fracture was observed.

The test was passed.

Date of test execution: 2020-07-03

Remarks:

none

Equipment Used:

EFBE frame fatigue test stand, serial no. 02, last calibration 2020-01-07

EFBE frame fatigue test stand, serial no. 08, last calibration 2020-01-08

Lab scale 440-49N; serial no. WD140025122, 0 - 4 000 g; not calibrated

Torque wrench Tohnichi DB 12 N, +/- 12 N serial no. 316089Q, not calibrated

Digital caliper Holex, serial no. 412811150 H1115082, 0 - 160 mm, not calibrated

Digital level Mitutoyo Pro 360, serial no. 950-315, 360°, not calibrated

Folding rule Wiha Long plus Life composite; 0 - 2 m, not calibrated

Ambient Conditions During Testing:

Temperature: 23° C ± 5°

Relative humidity: 40 … 60 %

Test Engineer: Jens Geisler ……

Waltrop, 2020-07-14

2nd Visual Inspection and Approval: Siggi Kotzur ……

Waltrop, 2020-07-14