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CARBONRACING / CR5-55

UCI drop test performed at CPTesting

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01 UCI drop test



Test method:

Vertical drop test (neutralization of the rebound of the anvil)

Energy level:

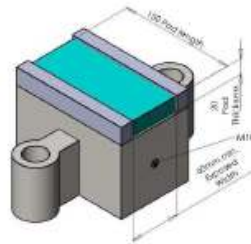
40 Joules

Impact striker geometry:

Flat steel anvil, the impact surface is covered with a **silicone** rubber pad of 20mm thickness (Hardness Shore A=50 +/- 5, Compression set of 40% acc. To ASTM D395 Methode B). The rubber pad requires to be undamaged.



Picture 1: Vertical drop test installation



Picture 2: Flat steel anvil with covered surface

Impact mass:

Range of 6 - 10kg

Energy must always remain at 40 Joules at the hit with a +/- 5% tolerance.

Hitting point:

One hit at 90° from valve hole, adjusted to have the point between the spokes

Failure criteria (for alloy and carbon wheels):

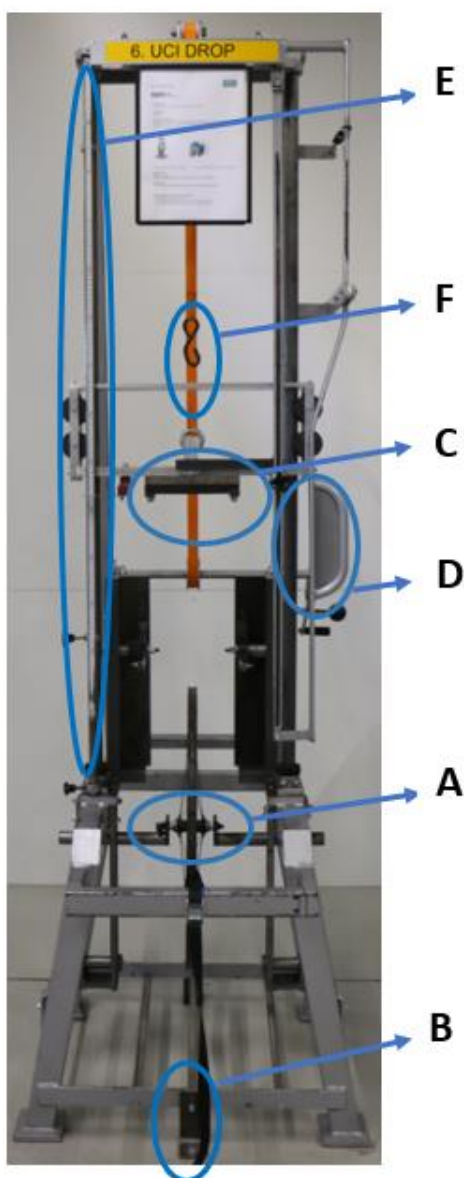
- No visible cracks or delamination
- No change in lateral profile or in lateral run out in excess of 1.0mm
- No change in radial profile or in radial run out in excess of 1.0mm

02 Description machine

1) Front and side picture of the machine



2) Description of the different components



B: These clamps are used to mount the machine into the ground so that there is as little as possible damping of the energy that is produced by the fall of the load.

C: Drop down load with rubber pad.
Rubber pad: strip RX EPDM 50° Sh. 200x200x20

D: The handle on the right side of the machine holds the load on its place using a horizontal bar. When you pull the handle to the front the load will fall on the rim and the test will be performed.

E: The ruler on the left side of the machine can be used to fix the load on the recommended height to perform the test. Before the test can start we need to make sure that the ruler is adjusted to the rim that is being used so that the load is falling from the right height and therefore produces the right amount of energy.

F: when the machine is not used, you can hang the load on the orange rope to ensure that it doesn't drop down at an unexpected moment.



G

G: The mass of the load in total is 9.4kg.

H: 40 Joules needs to be generated during the test according to UCI rules. To obtain this amount of Joules we need to drop the load from a height of 0.4338m.

$$0,4338(m) = 40(J) \\ \div (9,81(\frac{m}{s^2}) \times 9.4(kg))$$

I: The little wheels on the right and left side of the machine are there to guide the load. They almost don't touch the guiding bars and will therefore produce no friction.

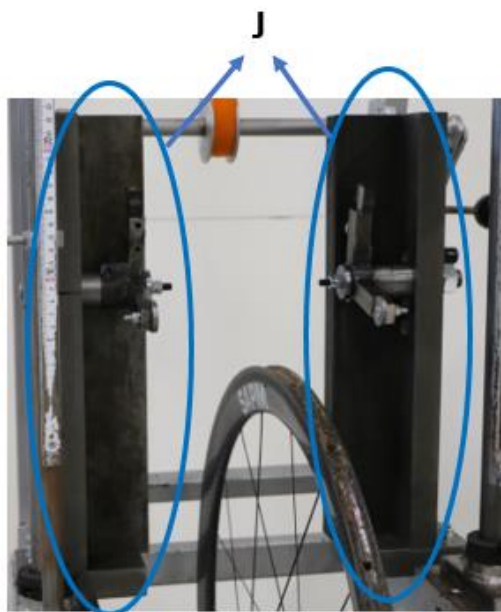


I

J: anti-rebound system: this system makes sure that the weight will only bounce one time on the wheel.



H



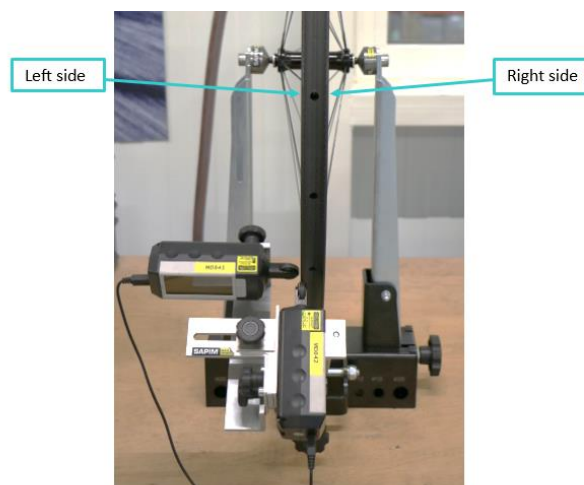
J

03 Procedure deviation

To measure the deviation, we work with easy truing device. (See picture below)



We measure first the left side of the rim.
After we turn the wheel and measure the right side of the rim.
(See picture below)



04 Pictures of wheel in the installation

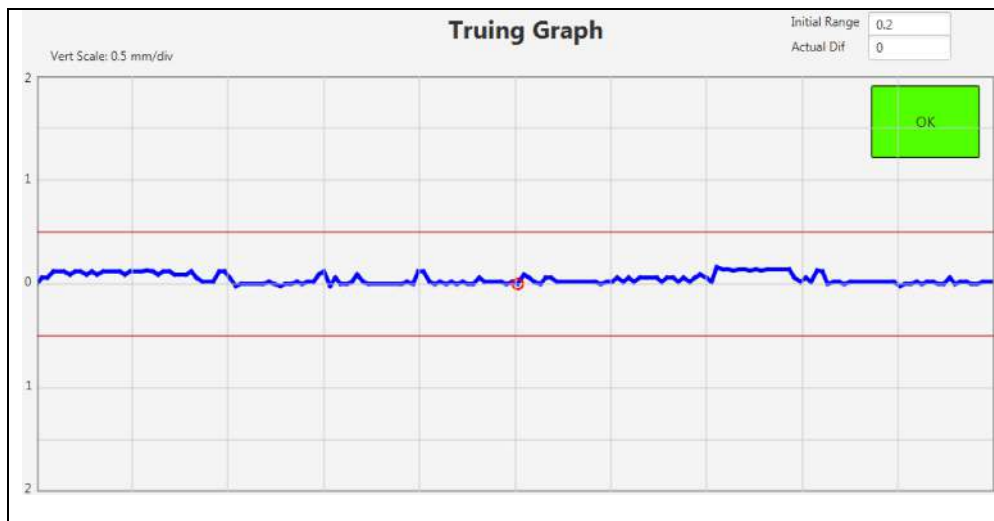


04 Results

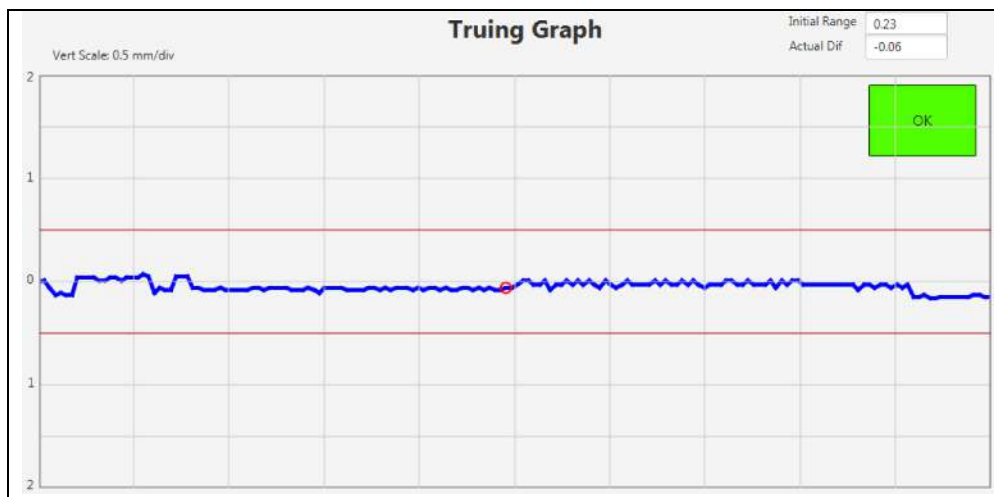
Deviation report after impact CR5-55

The red mark on the graph is the place of impact

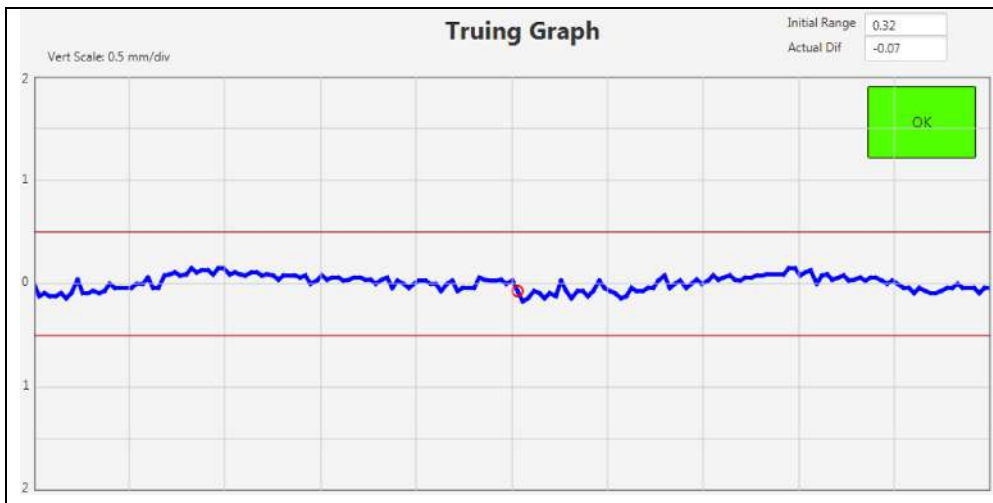
AXIAL on left rim hook



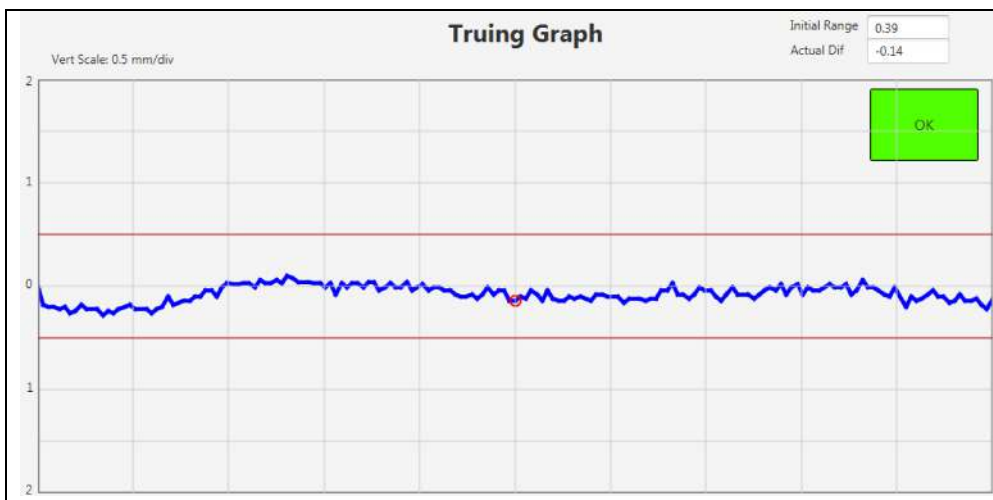
AXIAL on right rim hook



RADIAL on left rim hook



RADIAL on right rim hook



Picture after drop on place of impact



05 Conclusion

CR5-55

- no visible cracks or delamination on the rim pass
- no change in lateral profile or in lateral run out in excess of 1.0mm
Initial Range left = 0,20 see deviation report pass
Initial Range right = 0,23 see deviation report pass
- no change in radial profile or in radial run out in excess of 1.0mm
Initial Range left = 0,32 see deviation report pass
Initial Range right = 0,39 see deviation report pass

Test performed by Mike Van Schil
Report written by Mike Van Schil
Wilrijk, 03.05.18