

Summary Report for Certificate No. 2012/B08 of February 03, 2012
Test Report No. 11/264

Safety-related test in accordance with the requirements of the test program velotech.de Q2011

Component Disc brake (front wheel) for bicycles
Seller / Company Shimano Europe
Model Shimano SLX: M666
 Brake pads: F01A / Resin
 Brake rotor: RT81-M / 180mm

Requirements and test results: Deceleration and heat resistance
(Reference values: DIN EN and GS-mark (for informational purposes))

1. Braking deceleration in dry and wet conditions

| | A | B | C | D | E |
|------------------------------------|------------------------|----------------------------|------------------------|-------------------------|--------------------|
| Deceleration m/sec ² | EN 14766 MTB | GS-mark test principles | velotech.de Q2011 | Test result | Relation D to C |
| Front wheel dry | 4.2 m/sec ² | 6.0 m/sec ² | 6.0 m/sec ² | 10.7 m/sec ² | 178 % |
| Front wheel wet | 2.2 m/sec ² | 4.5 m/sec ² | 4.5 m/sec ² | 11.0 m/sec ² | 244 % |

Information on requirements and test results for braking deceleration

The minimum requirements of the European EN-standards can be traced back to the German bicycle safety standard DIN 79100. The draft standard was first published in 1988 as a piece of advanced information for the public. Deceleration values refer to a decelerated mass of 100 kg and 180 N hand force. The requirements and tests established back in 1988 are still used as principles for testing in accordance with DIN EN for city bicycles. The technology of bicycle brakes, however, has advanced significantly. Modern mountain bike disc brakes for example (as in this test) should outperform these requirements by far.

2. Theoretically required hand force in order to arrive at a deceleration of 6 m/sec² on the front wheel

| | A | B | C | D | E |
|--|--------------|----------------------------|----------------------|-------------|--------------------|
| Operating force (N) at 6 m/sec ² | EN 14766 MTB | GS-mark test principles | velotech.de Q2011 | Test result | Relation D to C |
| Front wheel dry | 260 N | 180 N | 180 N | 83 N | 46 % |
| Front wheel wet | (490 N) | (240 N) | 240 N | 83 N | 35 % |

Note:

A deceleration of approximately 6 m/sec² must be considered the achievable maximum for a bicycle on a flat and non-slip road surface before the rear wheel would raise and the rider would risk to fall. It therefore describes a deceleration limit that should be obtainable with normal hand force.

3. Heat resistance

Again DIN 79100 specifies relative values. For city bicycles the test should be run at 225 W for a duration of 2x 15 minutes with 10 intervals of 2 seconds each. This corresponds to a deceleration of 0.65 m/sec².

| | A | B | C | D | E |
|-------------------|-------------------------|----------------------------|-------------------------|-------------------------|--------------------|
| Heat resistance | EN 14766 MTB | GS-mark test principles | velotech.de Q2011 | Test result | Relation D to C |
| Thermal test load | 300 W | 500 W | 700 W | 1050 W | 150 % |
| Duration | 10x 90 sec. | 20x 90 sec. | 20x 90 sec. | 20x 90 sec. | ./. |
| Test deceleration | 0.85 m/sec ² | 1.44 m/sec ² | 2.02 m/sec ² | 3.03 m/sec ² | |

Note:

The thermal endurance test was carried out in three steps: 350 W, 700 W, and 1050 W. The value given in this summary report describes only the result of the last step of the test with a thermal load of 1050 W.

Summarization

The Shimano SLX-disc brake with IceTech technology under test was equal to the deceleration test requirements in dry and wet conditions and to the requirements in respect to heat resistance in accordance with the demanding standards set by the velotech.de Q2011 mark and has by far exceeded those based on the test principles that would apply for granting the GS-mark. The brakes performed without any unusual signs of noise (no brake squeal). The test results confirm that the SLX-disc brake is suitable and safe for use.



03.02.2012

Date

Signature (Ernst Brust)