



Standard Test Methods for Bicycle Frames¹

This standard is issued under the fixed designation F2711; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 These test methods establish procedures for conducting tests to determine the structural performance properties of bicycle frames.

1.2 These test methods describe mechanical tests for determining the following performance properties:

- 1.2.1 Frame Fatigue—Horizontal Loading,
- 1.2.2 Frame Fatigue—Vertical Loading, and
- 1.2.3 Frame Impact Strength.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards*:²

E4 Practices for Force Verification of Testing Machines

3. Terminology

3.1 *Definitions of Terms Specific to This Standard*:

3.1.1 *bicycle*, *n*—two-wheeled, single track, articulated vehicle that is solely human powered.

3.1.2 *bicycle fork*, *n*—structural connection between the front wheel and the frame.

3.1.2.1 *Discussion*—The fork transmits steering torque from the handlebars to the front wheel.

3.1.3 *bicycle frame*, *n*—structural member that supports the seat with rear connection for the rear wheel, front connection

via the head tube for the fork and lower connection for the crank/pedal assembly.

3.1.4 *bottom bracket shell*, *n*—structural member of the frame that houses the assembly that supports the bearings, which support the cranks.

3.1.5 *crank*, *n*—lever arm that receives human energy as torque to convert into bicycle motion.

3.1.6 *crown race seat*, *n*—position on the fork where the lower steering axis bearing sits.

3.1.7 *down tube*, *n*—lower structural connection between the head tube and the bottom bracket shell.

3.1.8 *dropout centerline*, *n*—hub-mounting axis that passes through both right and left dropouts.

3.1.9 *front dropout*, *n*—area where the front wheel hub connects to the fork.

3.1.10 *head tube*, *n*—forward most structural member of the frame, which provides an interface through top, and bottom bearings for the fork.

3.1.10.1 *Discussion*—The head tube is connected to the seat tube through the top tube and the down tube.

3.1.11 *initial running displacement*, *n*—average displacement between approximately 500 and 1000 cycles during a durability fatigue test.

3.1.12 *normal attitude*, *n*—intended position of the bicycle frame when in continuous straight-line motion on a flat surface.

3.1.13 *rake*, *n*—straight-line distance from the front axle center to the perpendicular of the steering axis.

3.1.14 *rear dropout*, *n*—area where the rear wheel hub connects to the lower rear and the upper rear frame members.

3.1.15 *sag*, *n*—amount of compression in a suspension unit, given in a percentage.

3.1.16 *seat post*, *n*—structural component that connects the seat to the seat tube.

3.1.17 *seat tube*, *n*—structural member of the frame into which the seat post inserts.

3.1.18 *steerer tube*, *n*—section of the bicycle fork that is housed within the head tube and bearing assemblies.

3.1.19 *top tube*, *n*—upper structural connection between the head tube and the seat tube.

¹ This test method is under the jurisdiction of ASTM Committee F08 on Sports Equipment, Playing Surfaces, and Facilities and is the direct responsibility of Subcommittee F08.10 on Bicycles.

Current edition approved Nov. 1, 2012. Published December 2012. Originally approved in 2008. Last previous edition approved in 2008 as F2711 – 08. DOI: 10.1520/F2711-08.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.