



Standard Test Method for Measuring the Performance of Synthetic Rope Rescue Belay Systems Using a Drop Test¹

This standard is issued under the fixed designation F2436; 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 This test method covers drop test procedures to measure rope rescue belay system performance. It applies only to belay systems consisting of an untensioned rope connecting the load to an anchored belay device. This test method does not address other types of belays, such as self-belays or belays for lead climbing, nor does it test the rescuer's belaying ability.

1.2 This test method may be used to help measure a rescue belay system's performance under controlled drop test conditions, but it will not necessarily provide guidance as to which belay method is most suited to a particular application. Other considerations, such as ease of handling, performance on different types and diameters of rope, portability, versatility, system safety factor, cost, and automatic operation that do not require the positive action of the belayer may influence the selection of a belay system and are not dealt with in this test method. See [X1.1](#).

1.3 The values stated in SI units are to be regarded as standard.

1.4 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Additional precautions for this test method are given in [8.1](#) and [8.2](#).

2. Referenced Documents

2.1 ASTM Standards:²

[D1776](#) Practice for Conditioning and Testing Textiles

¹ This test method is under the jurisdiction of ASTM Committee [F32](#) on Search and Rescue and is the direct responsibility of Subcommittee [F32.01](#) on Equipment, Testing, and Maintenance.

Current edition approved Dec. 1, 2014. Published January 2015. Originally approved in 2005. Last previous edition approved in 2011 as F2436–05 (2011). DOI: 10.1520/F2436-14.

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.

[F2266](#) Specification for Masses Used in Testing Rescue Systems and Components

2.2 Other Document:

[CI 1801-98](#) Low Stretch and Static Kernmantle Life Safety Rope³

3. Terminology

3.1 Definitions:

3.1.1 *belay, n*—a secondary system, or the system components, used to arrest the load in the event of a failure in the system.

3.1.2 *belay, v—in rope rescue systems*, to operate an untensioned secondary rope (belay line) so that it may be taken in or let out as the load is raised or lowered, and then hold the load in case of failure of the lifting line (working line) system.

3.1.3 *belay assembly, n*—all elements of the belay system, but not including the belay line and the belay anchor.

3.1.4 *belay assembly extension, L, (cm), n*—the increase in length of the belay assembly, due to stretch or other extension, measured from the anchorage to the farthest gripping point of the belay assembly while statically tensioned, post-drop, expressed in centimetres (cm).

3.1.5 *belay device, n*—that element of the belay system providing a moveable connection point to the belay line, which can secure the belay line when necessary.

3.1.6 *belay line, n—in rope rescue systems*, a secondary line, generally untensioned, acting as a back-up to the lifting line as distinguished from the lifting line (working line) that actually raises, lowers, or transports the load.

3.1.7 *belay system, n*—the belay assembly and the belay line, but for the purposes of this test method, not including the belay anchor.

3.1.8 *belay system extension, L, (cm), n*—the distance below the zero line (this excludes drop height) reached at the maximum extension during fall arrest, prior to rebound; also known as stopping distance, expressed in centimetres (cm).

3.1.9 *belay system failure, n*—when the test block hits the ground.

³ Available from Cordage Institute, 994 Old Eagle School Rd., Wayne, PA 19087, <http://www.ropecord.com>.