



Standard Test Method for the Determination of Percent of Let-Off for Archery Bows¹

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1. Scope

1.1 This test method covers the procedure to be used to determine the percent of let-off for archery bows.

1.2 *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

F1832 Test Method for Determining the Force-Draw and Let-Down Curves for Archery Bows

3. Terminology

3.1 *Acronyms:*

3.1.1 *ATA*—Archery Trade Association

3.2 *Definitions:*

3.2.1 *ATA actual draw length, n*—distance from the bow's string at the nocking point location, while at the bow's full draw condition, measured perpendicular to a vertical line through the pivot point of the bow grip, plus 1 3/4 in. (+ 1/4, – 0 in.). <https://standards.iteh.ai/catalog/standards/sist/a7187660-1880-4000-9000/f1880-09>

3.2.2 *brace height, n*—the distance in inches or millimetres from the shooting string of a bow to the pivot or low point of the hand grip, measured perpendicular to the string at the un-drawn condition.

3.2.3 *compound bow, n*—a type of bow that imposes a secondary system of control of the force-draw characteristic on the usual limb geometry control system of the conventional bow. This secondary control system can be composed of cams, levers, cables, or other elements, or a combination thereof. The dual control system permits great versatility in the design of the

force-draw characteristic and simplifies the inclusion of let-off. In general, it is normal for compound bows to have greater stored energy than conventional bows for a given level of peak or maximum draw weight.

3.2.4 *draw, n*—to move the shooting string of a bow from the rest or brace position toward the fully drawn position by applying force to said string. Such action causes the limbs of the bow to bend and store energy. Moving the string from brace height to the full-draw position corresponds to the draw cycle of a bow.

3.2.5 *draw force, n*—that level of force necessary and coincidental with drawing a bow to a specific position within its ATA actual draw length.

3.2.6 *force-draw curve, n*—the curve obtained when the draw force is plotted versus the ATA actual draw length for a given bow.

3.2.7 *full draw, n*—the position in a draw cycle of a bow from which the string of the bow is released and the force applied to the rear of the arrow to commence the launch. The full-draw position of individual archers will vary due to personal physical characteristics and shooting style. Archery bows are specified as to the range of draw length that they will accommodate to permit archers to select a size that will fit them. Precise draw length is less of a factor on conventional bows as compared with compound bows, since it is ideal to match the draw length of the archer to the position of maximum let-off in the draw cycle of the compound bow. The position of maximum let-off for compound bows usually is adjustable within specified limits.

3.2.8 *holding force, n*—the force required to retain the bowstring of a drawn bow at a specific ATA actual draw length.

3.2.9 *let-down curve, n*—the curve obtained when the force necessary to restrain the bow from returning to brace height is plotted versus the ATA actual draw length.

3.2.10 *let-down force, n*—the force required to retain the bowstring of the drawn bow at a specific ATA actual draw length during the let-down cycle. This let-down force differs from the draw force at the same length by the amount of static hysteresis.

3.2.11 *let-off, n*—that characteristic of an archery bow that results in a reduction in the force necessary to increase the draw length of the bow after the highest level of draw force has

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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.