Designation: F 1880 – 98ε1

An American National Standard

Standard Test Method for the Determination of Percent of Let-Off for Archery Bows[1]

This standard is issued under the fixed designation F 1880; 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.

ε[1] NOTE—Sections 3.1.1, 3.1.2, 5, 5.1, and 5.3 were editorially updated in September 2003.

1. Scope

1.1 This test method establishes 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:*

F 1832 Method for Determining the Force-Draw and Let-Down Curves for Archery Bows[2]

3. Terminology

3.1 *Definitions:*

3.1.1 *ATA*—an acronym for the Archery Trade Association.

3.1.2 *ATA draw length*, *n*—the perpendicular distance from the point where the shooting string of the bow contacts the bottom of the nock slot of the arrow, to a line parallel to the string at brace height through the pivot or low point of the hand grip (draw length-pivot point), plus a standard dimension of 1 ¾ in. (44.5 mm). Draw length shall be measured with the arrow in the full draw position.

3.1.3 *brace height*, *n*—the distance in inches or millimeters from the shooting string of a bow to the pivot or low point of the hand grip, measured perpendicular to the string.

3.1.4 *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, and 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.

3.1.5 *conventional bow*, *n*—a bow constructed in the conventional manner, having two flexing limbs extending outwardly in opposite directions from a handle. A single shooting string of a length shorter than the bow, connects the extreme ends of the limbs causing them to assume a prestressed flexed condition. Drawing the bow causes additional bending and stressing of the limbs, storing the energy necessary to propel the arrow. Control of the force-draw characteristic of the bow is exercised entirely by the static and dynamic geometry of the flexing limbs.

3.1.6 *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.

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

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

3.1.9 *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 to 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.

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

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

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

[1] This test method is under the jurisdiction of ASTM Committee F08 on Sports Equipment and Facilities and is the direct responsibility of Subcommittee F08.16 on Archery Products.

Current edition approved April 10, 1998. Published September 1998.

[2] *Annual Book of ASTM Standards*, Vol 15.07.