



Designation: F3460 – 21

Standard Test Method for Seam Measurement Procedure for Baseballs and Softballs¹

This standard is issued under the fixed designation F3460; 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 is intended to standardize a method of measuring the seam height of baseballs and softballs.

1.2 This standard is established to provide a single, repeatable, and uniform test method.

1.3 This test method is for a ball that is intended for use in the game of baseball or softball.

1.4 *Units*—The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Terminology

2.1 *Definitions of Terms Specific to This Standard:*

2.1.1 *baseball and softball, n*—any ball defined by the rules for the game of baseball or softball.

2.1.2 *clear panel, n*—non-seam region of the ball cover.

2.1.3 *panel, n*—two larger end regions of the clear panel.

2.1.4 *seam, n*—line along which two edges of ball covers are sewn together (stitch line).

2.1.5 *seam height, n*—numerical value determined by measuring the height of the seam of a ball relative to the height of the clear panel of the ball.

2.1.5.1 *Discussion*—The seam height may consist of a

single measurement at a single location or the averaging of multiple measurements at multiple locations on an individual ball.

2.1.5.1 *average seam height (ASH)*—average ball seam height relative to the region adjacent to the seam.

2.1.5.2 *average ball seam height (ABSH)*—average ball seam height relative to the center of the panel.

2.1.6 *seam region, n*—region of the ball which includes the seam and stitches and is bound by the lines generated on the ball by the edge of the holes in the covers that is furthest from the seam and on the outer surface of the ball.

2.1.7 *seam width, n*—numerical value determined by measuring the distance across the seam from the outside edge of the stitching hole on one side of the seam to the outside edge of the hole on the other side of the seam (see Fig. 1).

2.1.7.1 *Discussion*—In cases when the outside edge of the hole is distorted as a result of stretching of the hole, the outside edge is defined as the edge between the side wall of the hole and the surface of the ball.

2.1.7.2 *Discussion*—The seam width may consist of a single measurement at a single location or the averaging of multiple measurements at multiple locations on an individual ball.

3. Summary of Test Method

3.1 A baseball or softball is placed on a cradle apparatus with a dial indicator located on the clear panel and then on the seam of the ball. The difference between the height measurements is recorded.

4. Significance and Use

4.1 The ball seam height of a baseball or softball is a measurement that can correlate to ball grip and aerodynamic properties.

4.2 This test method is suitable for obtaining data in research and development, quality control, and classifying balls by seam type.

4.3 Sports associations can use seam height standards in specifications for official baseballs and softballs.

4.4 Users of this test method may be testing individual baseballs or softballs or entire production lots of baseballs or softballs. If a single ball or small sample of balls are being measured for individual properties, multiple measurements

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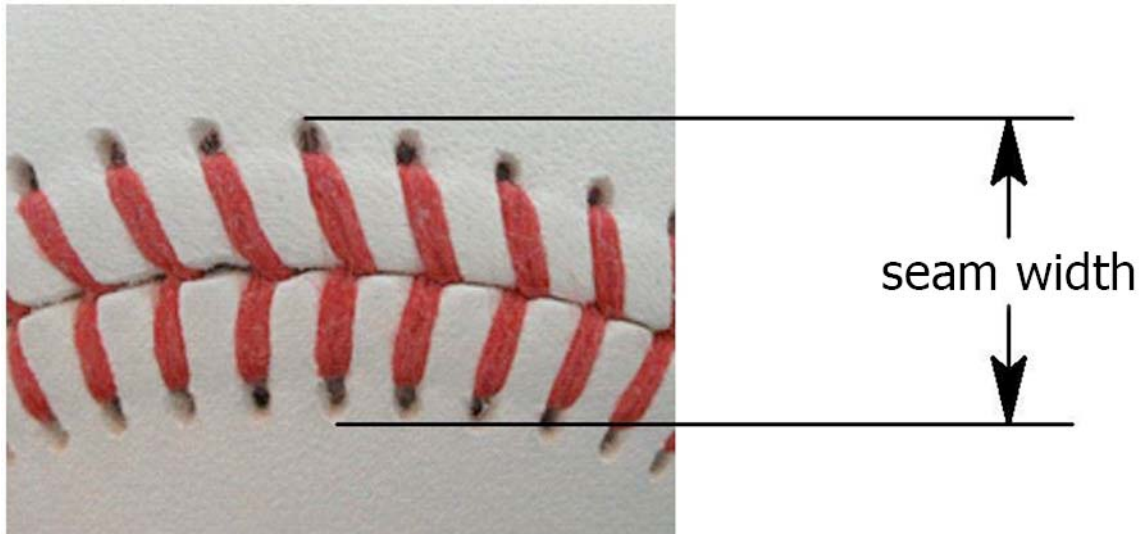


FIG. 1 Seam Width

should be performed on the balls. If a large sample of balls is being measured for the overall seam characteristics of the large sample, then an individual seam height measurement may be recorded for a ball. Thus, number of measurement points (m) on any one ball is at the discretion of the test sponsor of this test method.

5. Apparatus

5.1 *Dial Indicator*—A standard dial indicator with an accuracy of at least ± 0.001 in. (0.0025 cm) equipped with a flat-type contact point 0.182 to 0.260 in. (0.462 to 0.660 cm) in diameter.²

5.2 A three-point contact cradle (see Fig. 2) for securing the ball in place while measuring the height with a fourth contact point (dial indicator plunger/indicator tip) located at the center.

5.2.1 The device is to have three posts, equally spaced, on a 1.875 ± 0.001 in. (4.763 ± 0.0025 cm) bolt circle diameter (BCD) to form the corners of an equilateral triangle.

5.2.2 A base for mounting the dial indicator.

5.2.3 The dial indicator is positioned below device, the posts are positioned in a vertical orientation, and the ball rests on posts because of gravity (see Fig. 3).

5.3 *Calipers*—A standard caliper with an accuracy of at least ± 0.001 in. (0.0025 cm).

6. Conditioning

6.1 *Ball Conditioning and Test Room Conditions:*

6.1.1 Test balls shall be stored in an environmentally controlled space for at least 24 h immediately before testing.

6.1.2 Temperature is to be maintained at $72 \pm 4^\circ\text{F}$ ($22 \pm 2^\circ\text{C}$).

6.1.3 Relative humidity is to be maintained at between 40 and 60 %.

² For most dial indicators, the tip can be replaced by a socket head or flat head screw with a #4-48 UNF thread to meet the contact point requirement.

6.1.4 Temperature and humidity are to be measured and recorded hourly within $\pm 0.5^\circ\text{F}$ ($\pm 0.3^\circ\text{C}$) and ± 2 % relative humidity (RH) over conditioning and test duration.

7. Procedure

7.1 *Seam Height Measurement:*

7.1.1 *Ball Panel Measurement:*

7.1.1.1 Orient the ball in the cradle such that the ball is resting on the three posts and ensure all three contact points are not within 0.05 in. (1.27 cm) of the seam region.

7.1.1.2 Adjust the dial indicator up or down as necessary so that the indicator tip is in contact with the ball panel at a distance $0.XXX \pm 0.025$ in. ($0.XXX \pm 0.064$ cm) of the seam region, but fully on the clear panel (see Fig. 4).

(1) Distance 0.XXX is a value between 0.025 in. and 0.135 in. (0.064 cm and 0.343 cm) and is specified by the association using this test method.

7.1.1.3 Record the measurement, h_{np} , on the dial indicator while making contact at the clear panel of the ball where n is the location index $n = 1, 2, 3 \dots m$ and m is the total number of measurements at the discretion of the test sponsor of this test method.

7.1.2 *Seam Thread Measurement:*

7.1.2.1 Orient the ball in the cradle such that the ball is resting on the three posts and ensure all three contact points are not within 0.05 in. (0.13 cm) of the seam region.

7.1.2.2 Adjust the dial indicator up or down as necessary so that the indicator tip is in contact with the maximum height of the ball seam or thread adjacent to the location of the prior clear panel measurement.

7.1.2.3 Record the measurement, h_{ns} , on the dial indicator while making contact at the ball seam where $n =$ location index and $n = 1, 2, 3 \dots m$.

7.1.3 The difference between the panel measurement (h_{np}) and the seam measurement (h_{ns}) is used to determine seam height (SH_n) at position n .

$$SH_n = h_{ns} - h_{np} \quad (1)$$

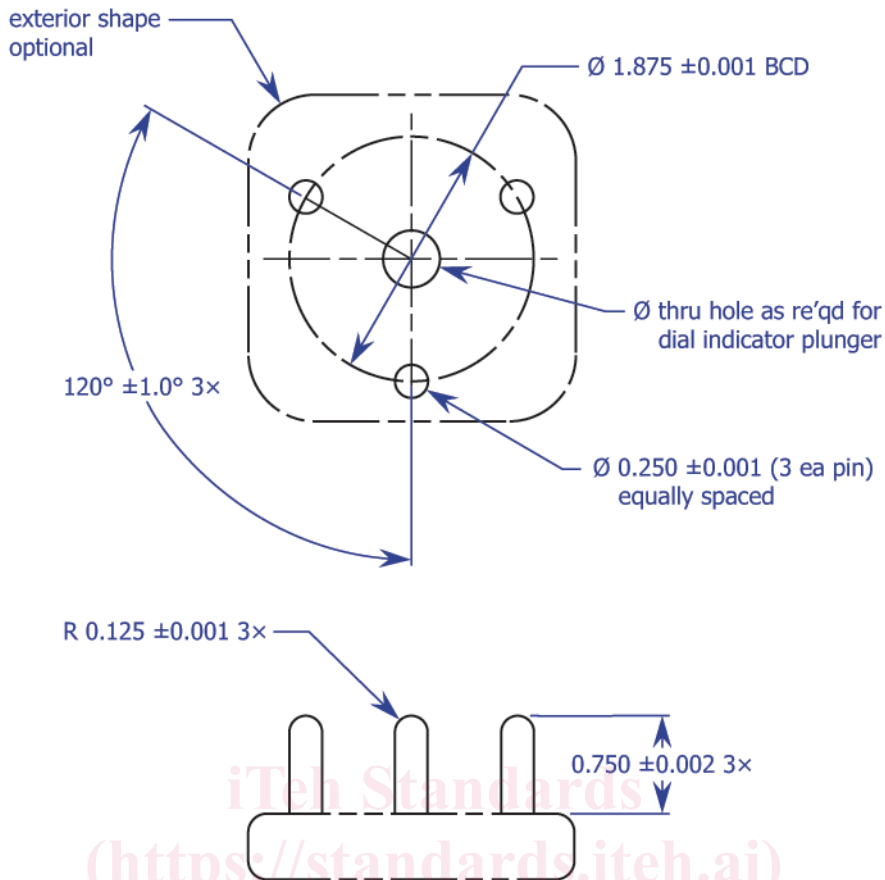


FIG. 2 Three-Point Contact Cradle



FIG. 3 Example of a Dial Indicator, 3-Point Contact Cradle and Base with Ball



0.XXX +/- 0.025"
(0.XXX between 0.025"
to 0.135"; see 7.1.1.2)

FIG. 4 Dial Indicator Showing Spacing of Indicator Tip Placement for Panel Measurement

7.1.4 Repeat the seam height measurement 7.1.1 – 7.1.3 at other locations along the ball seam as necessary until the m seam heights are quantified.

7.1.4.1 Measurement locations shall be at least 1.0 in. (2.54 cm) away from each other along the seam path.

7.1.4.2 The location of the h_{np} measurement shall alternate from one side of the seam to the other side of the seam, such that half of the measurements are from the left side of the seam and half are from the right side of the seam along the path of the seam.