

**STANDARD PERFORMANCE
SPECIFICATION FOR
NEWLY MANUFACTURED
BASEBALL/SOFTBALL BATTER'S
HELMETS**

NOCSAE DOC (ND) 022-20

Prepared By



**NATIONAL OPERATING COMMITTEE
ON STANDARDS FOR ATHLETIC EQUIPMENT**

Revised February 2020

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1. Scope

- 1.1. This standard specification establishes performance requirements for new baseball/ softball batter's helmets as supplied by manufacturers. The requirements of this standard shall be subject to Level 3 compliance criteria unless otherwise stated herein.
- 1.2. **All testing and requirements of this standard specification must be in accordance with NOCSAE DOC 001 and NOCSAE DOC 021, except where modified herein.**
- 1.3. *This standard does not purport to address all of the safety problems, 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. NOCSAE DOC (ND) 001: *Standard Test Method and Equipment Used in Evaluating the Performance Characteristics of Headgear/Equipment*
- 2.2. NOCSAE DOC (ND) 021: *Standard Projectile Impact Test Method and Equipment Used in Evaluating the Performance Characteristics of Protective Headgear/Projectiles*

3. Test Sample Size

- 3.1. See Sections 6 and 11, NOCSAE DOC 001, for QC/QA protocol testing.
- 3.2. For any standalone test report; At least three (3) of each helmet model in each of the critical sizes must be tested

4. Helmet Preparation

- 4.1. See Section 10 and 12, NOCSAE DOC 001.
- 4.2. To obtain a reasonable fit (as determined by the test technician) for testing purposes, helmets with the thinnest padding in a shell size, **may** require "shim" pads to be inserted between the smallest NOCSAE headform that the helmet is to be tested on and the interior of the helmet, opposite from the impact site.
- 4.3. Helmets of a given model with a size smaller than 6 5/8 **may** not fit the smallest NOCSAE headform. In that event, testing of that size is waived so long as the other sizes of that model have been tested and meet all requirements.

5. Impact Attenuation Tests

- 5.1. Impact locations are described in Section 19, NOCSAE DOC 001 and shown in Figure 1.
 - 5.1.1. Because of the sun visor on a batter's helmet, the standard front impact location shall be obtained by tilting the headform and helmet forward approximately 40 ± 1 degrees towards the end of the muzzle. The projectile shall be aimed at the

standard front impact location which will allow the impact without the ball actually touching the visor.

- 5.1.2. For the random impacts, the headform and helmet can be oriented either in an upright (vertical) position or tilted approximately 40 ± 1 degrees.
- 5.2. The head model will be positioned with its impact site located within 24 inches (610 mm) from the end of the muzzle (or from the point at which the ball is released).
- 5.3. Two of the submitted sample helmets shall be impacted with a softball in accordance with Table 1 below and as depicted in Figure 2.
- 5.4. The third submitted sample shall be impacted at ambient condition with a baseball in two locations. At least one of the locations shall be the location that exhibited the highest resultant Severity Index reading of the two sample helmets when impacted at ambient condition with a softball. The other location shall be selected to exploit any location on the helmet within the specified impact area (Figure 1) that may result in a failure during the impact test. The impact velocity with a baseball shall be $60 \pm 3\%$ MPH.
- 5.5. The softball(s) used shall weigh $5 \frac{7}{8}$ to $6 \frac{1}{8}$ ounces (166 - 174 grams), have a circumference of 10.875 – 11.125 inches and have a C-D at .25 inches of no less than 300 lbs.
- 5.6. The baseball(s) used shall weigh 5 - $5 \frac{1}{4}$ ounces (142 - 149 grams), have a circumference of 9 - 9.25 inches, and have a C-D at .25 inches of 200 - 300 lbs and be of the construction specified and used by Major League Baseball.
- 5.7. The high temperature impacts are to be conducted on the same two (2) helmets upon which the ambient temperature softball impact tests were performed.

TABLE 1
LOCATION - MILES PER HOUR (m/sec)
(All speeds must be $\pm 3\%$)

	FRONT	RIGHT FRONT BOSS	RIGHT SIDE	RIGHT REAR BOSS	REAR	RANDOM
Ambient Temperature	55 (24.6)	55 (24.6)	55 (24.6)	55 (24.6)	55 (24.6)	55 (24.6)
High Temperature			55 (24.6)			

Notes: The high temperature condition impacts must be done after the ambient temperature impacts. Impact velocity must be within 3% of the specified velocity for that particular projectile.

6. Test Requirements

- 6.1. Helmet repositioning during testing is anticipated. Any structural changes or other changes that take place during impact testing which result in un-restorable, loosening of the fit (see Section 20, NOCSAE DOC 001) shall be cause for failure.
- 6.2. The peak severity index of any impact shall not exceed 1200 SI.

- 6.3. A passing helmet model is able to withstand all impacts at an acceptable SI and meets all other requirements when tested in accordance with this performance specification.

7. Labels and Warnings

- 7.1. See Section 9, NOCSAE DOC 001 and Section 9, NOCSAE DOC 021.
- 7.2. Each helmet shall have permanently affixed to the exterior of the shell a clearly legible statement which can be easily read without removal of any decal tape, other temporary material or permanent part, which contains language which effectively communicates to the purchaser and user the following information, using the same or similar language:

WARNING:

DO NOT USE THIS HELMET IF THE SHELL IS CRACKED OR DEFORMED, OR IF THE INTERIOR PADDING IS DETERIORATED. SEVERE HEAD OR NECK INJURY, INCLUDING PARALYSIS OR DEATH MAY OCCUR TO YOU DESPITE USING THIS HELMET. NO HELMET CAN PREVENT ALL HEAD INJURIES OR ANY NECK INJURIES A PLAYER MIGHT RECEIVE WHILE PARTICIPATING IN BASEBALL OR SOFTBALL.

- 7.3. A permanent, exact replica of this seal must appear legibly on the exterior of the shell

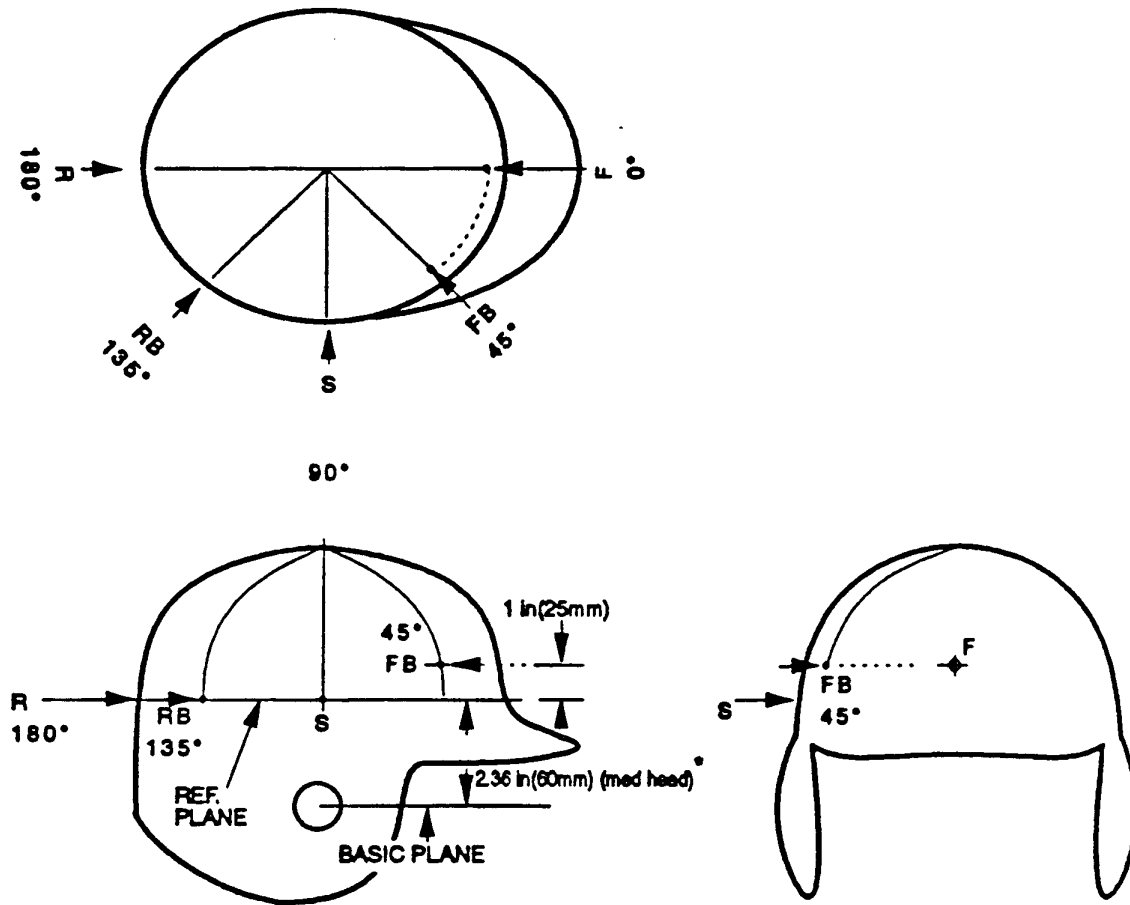


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**BATTER'S HELMET
IMPACT LOCATIONS**



* For the small headform the REFERENCE PLANE is 2.16 inches above the BASIC PLANE.
For the large headform the REFERENCE PLANE is 2.48 inches above the BASIC PLANE.

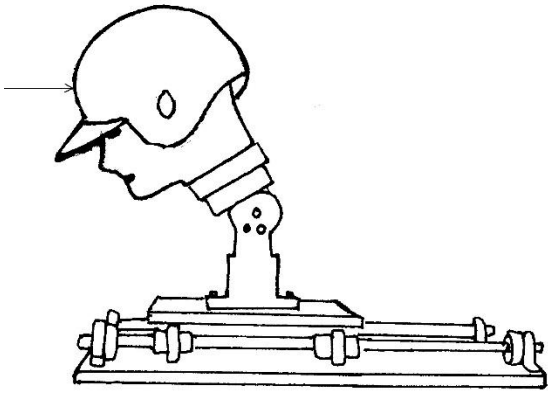
The random location may be selected from any point within the allowed impact area but not closer than 1 inch (25 mm) from the edge of the helmet nor less than 1 inch (25mm) from any previous impact.

Random locations chosen must allow the rotator assembly to be locked in the position selected.

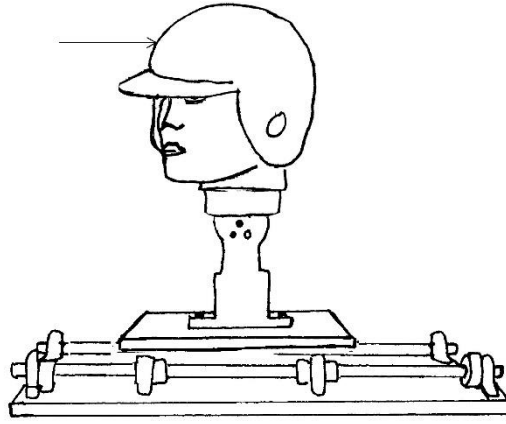
Impact area- for a helmet that is to be tested on the medium headform *, the impact area must include all locations on the headform above the BASIC PLANE rearward of a location 2.75 inches (70mm) forward of where the BASIC PLANE intersects with the CORONAL PLANE and any point on or above the REFERENCE PLANE in front of that same intersection.

*For the small headform use 2.50 inches (64mm) and for the large headform use 3.00 inches (76mm).

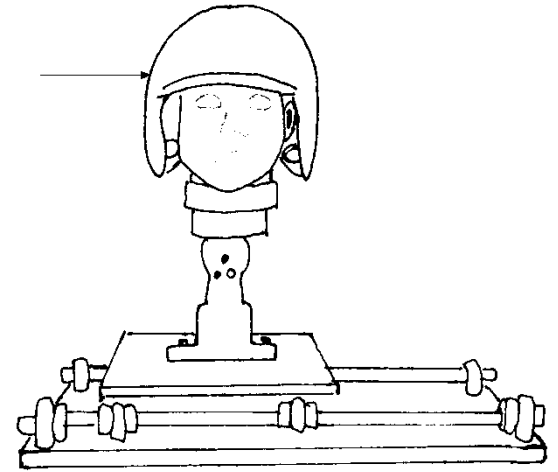
Figure 1



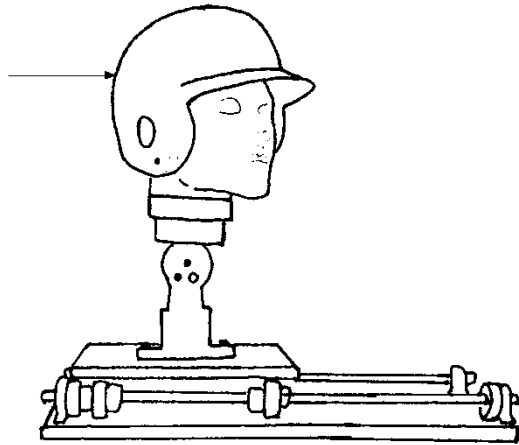
Front Impacts



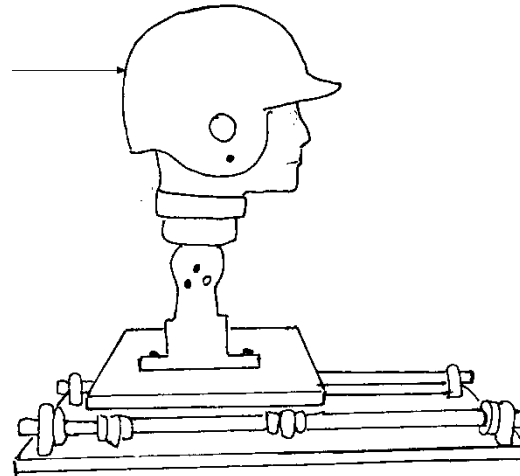
Right Front Boss Impacts



Right Side Impacts



Right Rear Boss Impacts



Rear Impacts

Figure 2

JANUARY 2002 MODIFICATIONS/REVISIONS

- Simplified document references within document.
- Changed Fig 1 text to clarify Impact Area.

JANUARY 2003 MODIFICATIONS/REVISIONS

- Correct typo in section 6.1 to read 9.6 instead of 9.1.6

APRIL 2003 MODIFICATIONS/REVISIONS

- REVISION: Defined random impact locations referenced from previous impacts.
- Modified naming convention and added NOCSAE logo to cover page.
- Modified the description of the projectile used.

JANUARY 2004 MODIFICATIONS/REVISIONS

- Modified Ball specifications for clarity

JUNE 2006 MODIFICATIONS/REVISIONS

- REVISION: Changed the number of samples required to be submitted. Changed the impact projectile and impact schedule. Defined the softball projectile.

DECEMBER 2006 MODIFICATIONS/REVISIONS

- Modified sections 5.5 and 5.6 to specify weight in ounces of baseball and softballs used.

MAY 2008 MODIFICATIONS/REVISIONS

- REVISION: Changed section 3.2.1 to allow shimming of helmet model size with thinnest padding

JANUARY 2009 MODIFICATIONS/REVISIONS

- Modified cover page, effective date no earlier than 2010

FEBRUARY 2010 MODIFICATIONS/REVISIONS

- REVISION: Changed the impact velocity specified for a softball impact to the helmet. Effective date remains unchanged

MAY 2010 MODIFICATIONS/REVISIONS

- Clarified section 5.5 statement for selecting baseball impact locations.

FEBRUARY 2011 MODIFICATIONS/REVISIONS

- Moved test requirements to Section 6. Clarified test requirements.

AUGUST 2011 MODIFICATIONS/REVISIONS

- Modified requirements for softball projectile

MAY 2012 MODIFICATIONS/REVISIONS

- Clarified section 3 for standalone test report
- Moved requirements to section 4 from section 3 for clarity
- Clarified figure 2 diagrams for front and front boss impact locations.

OCTOBER 2014 MODIFICATIONS/REVISIONS

- Updated document to include level of compliance requirements.
- Added Date specification becomes effective
- Updated title name of NOCSAE DOC 001
- Added SEI Certification NOCSAE Logo to Section 7, "Labels and Warnings"

JUNE 2015 MODIFICATIONS/REVISIONS

- Updated NOCSAE seal/logo artwork

FEBRUARY 2018 MODIFICATIONS/REVISIONS

- REVISION: Removed COR requirement from Section 5.6.
- Added reference to Section 12 NOCSAE DOC 001 in Section 4.
- General formatting updates
- Removed shimming language from 6.1

FEBRUARY 2020 MODIFICATIONS/REVISIONS

- REVISION: Added requirement for headform positioning to 40 degree tilt for standard front and allowing headform to be tilted either 40 degrees or upright for random impacts in section 5.1