

**STANDARD PERFORMANCE
SPECIFICATION FOR
NEWLY MANUFACTURED
BASEBALL/SOFTBALL FIELDER'S
HEADGEAR**

NOCSAE DOC (ND) 029-20

Prepared By



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

Revised December 2020

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UNAPPROVED REVISION

1. Scope

- 1.1. This standard specification establishes performance requirements for new baseball/softball fielder's headgear and optional baseball/softball fielder's headgear face protectors intended to be mounted to fielder's headgear certified as meeting the NOCSAE standard for baseball/softball fielder's headgear as supplied by the manufacturer of the face protector. The optional face protector shall be supplied with the required hardware and instructions for mounting, along with required accessories (like a chin strap) if any are required for the face protector to function as designed. Baseball/softball fielder's headgear and face protectors for use with softballs only must be clearly marked as such. 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 six (6) of each headgear model in each of the critical sizes must be tested.
- 3.3. Fielder's headgear that includes face protectors as an option must meet the Face Protector Impact Tests. At least two (2) sets of each face protector model in each of the sizes must be tested with the appropriate ball. Face protectors shall be mounted to a fielder's helmet that bears the NOCSAE logo and is listed by the protector manufacturer as being compatible and in a size that is appropriate for the protector. The face protector is to be installed by the manufacturer, or may be installed by the test technician, in accordance with supplied instructions. A different face protector is to be used for each test position at each temperature condition (a set constitutes five face protectors which are needed for the complete test series per ball type, and size). In cases where the protector is furnished in one size and fits more than one size of helmet testing shall be conducted on the medium head with helmets sized for the medium head.

4. Helmet Preparation

- 4.1. See Section 10 and 12, NOCSAE DOC 001.
- 4.2. Low Temperature: Expose product to conditioned temperature of 32°F + 0°F or - 3°F (0°C + 0°C or - 1°C) for at least four hours.
- 4.3. 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.
- 4.4. 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.
- 5.2. 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. Structural changes or other changes that take place after an impact test of the headgear in any location which results in loosening of the fit to the headform or is likely to cause erroneous results in subsequent locations shall require a new sample to be tested in subsequent locations. Potentially, a new helmet may be required for each impact location.
- 5.4. Two of the submitted sample helmets shall be impacted at ambient temperature with a softball in accordance with Table 1 below and as depicted in Figure 2.
- 5.5. Two of the untested submitted sample helmets shall be impacted at ambient temperature with a baseball in accordance with Table 2 below and as depicted in Figure 2.
- 5.6. One of the untested submitted sample helmets shall be impacted at high temperature condition with a softball at a velocity of 60.5 ± 1.8 MPH 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.
- 5.7. One of the untested submitted sample helmets shall be impacted at high temperature condition with a baseball at a velocity of 66 ± 2 MPH 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 baseball. 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.

- 5.8. 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.~~ **300 – 400 lbs.**
- 5.9. 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.

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

FRONT ¹	RIGHT FRONT BOSS	RIGHT SIDE	RIGHT REAR BOSS	REAR	RANDOM
60.5 (27.0)	60.5 (27.0)	60.5 (27.0)	60.5 (27.0)	60.5 (27.0)	60.5 (27.0)

TABLE 2
BASEBALL LOCATION - MILES PER HOUR (m/sec)
(All speeds must be $\pm 3\%$)

FRONT ¹	RIGHT FRONT BOSS	RIGHT SIDE	RIGHT REAR BOSS	REAR	RANDOM
66 (29.5)	66 (29.5)	66 (29.5)	66 (29.5)	66 (29.5)	66 (29.5)

6. Face Protector Impact Tests

- 6.1. Each submitted sample face protector shall be impacted with a ball in accordance with Table 3 below and as illustrated in Figure 3 (attached).
- 6.2. 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).
- 6.3. See Section 5, NOCSAE DOC 021.
- 6.4. Each face protector to be tested shall be mounted on a fielder's helmet according to the manufacturer's instructions. Face protectors shall be impacted at each of these positions:
- 6.4.1. Directly in front with the headform and helmet in an upright (vertical) position. [Barrel (line of ball travel) shall be perpendicular to the Coronal plane].
- 6.4.2. With the headform and helmet in an upright (vertical) position and rotated away from the Midsagittal plane at a 45° angle from the direction of impact.

¹ Because of the sun visor on a fielder's headgear, the frontal locations shall be obtained using the positioner adjuster locating holes, which will allow an impact to be centered around the point on the centerline of the headgear closest to the front rim of the visor without the ball actually touching the visor.

- 6.4.3. Random location: With the headform and helmet in an upright (vertical) position the headform may be located in a manner that allows the impact point to be within the “no contact area” as defined in Figure 4, attached. Pointer or other targeting means can be set within, or to any edge of, the “no contact” area. The center of ball contact must be at the edge of, or within the “no contact” area.
- 6.5. Impacts shall be aimed at each of the positions designated in 6.4 above according to the following:
- 6.5.1. At least one impact shall be at the center of the widest opening in the face protector.
- 6.5.2. At least one impact shall be aimed at the material structure of the face protector.
- 6.5.3. The random impact shall be selected to investigate any apparent weakness in the face protector, which may allow contact to the face.

TABLE 3

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

	FRONT (90°)	AT A 45° ANGLE	RANDOM
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Baseball Impact Speeds

Ambient Temperature	73.5 (32.9)	73.5 (32.9)	73.5 (32.9)
Low Temperature	73.5 (32.9)	73.5 (32.9)	N/A

Softball Impact Speeds

Ambient Temperature	61.5 (27.5)	61.5 (27.5)	61.5 (27.5)
Low Temperature	61.5 (27.5)	61.5 (27.5)	N/A

7. Test Requirements

- 7.1. Helmet repositioning during testing is anticipated.
- 7.2. The peak severity index of any impact shall not exceed 1200 SI.
- 7.3. 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.

7.4. When tested in accordance to Section 6, no contact to the ocular area is ever permitted. Limited contact to specific areas of the headform is allowed (limited contact area)[♦]. Contact occurring to the limited contact area must be restricted to those non-structural components of the headgear that are designed/intended to rest on or come in contact with the wearer's face. (See Figure 4).

7.4.1. Verification of contact - For verification of ball or protector contact with the face, cover the entire facial area (limited contact/ocular area) from the frontal bone superiorly to the mandible inferiorly with Pressure Indicator paste. Contact of either ball or protector with any part of the face will leave paste at the point of contact and proof of contact on the headform. Inspect thoroughly both the ball and the protector to determine if they contain residue of paste. Also inspect the headform ocular area for evidence of contact.

8. Labels and Warnings

8.1. Headgear Labeling

8.1.1. See Section 9, NOCSAE DOC 001 and Section 9, NOCSAE DOC 021.

8.1.2. Each headgear 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

8.1.3. Each headgear shall be permanently and legibly labeled or marked in a manner such that the following information can be easily read using the same or similar language and shall contain a signal word which shall not be obscured in any manner:

After receiving an impact, this headgear may be damaged to the point that it is no longer adequate to protect the head against further impacts, and this damage may not be visible. Headgear that has sustained an impact should be returned to the manufacturer for competent inspection or be destroyed and replaced.

[♦] This requirement shall be subject to Level 2 compliance criteria.

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



NOTE: You must have an executed, valid license agreement with NOCSAE to use any of the NOCSAE logos at any time. NOCSAE, the NOCSAE seals/logos, and the National Operating Committee on Standards for Athletic Equipment are registered marks and the exclusive property of the Committee. Use of the marks in any manner is prohibited without prior written permission of the NOCSAE Board of Directors.

8.2. Face Protector Labeling

- 8.2.1. See Section 9, NOCSAE DOC 001 with the exception of Sections 9.1.3, 9.2, 9.5, 9.6 and 9.9.

- 8.2.2. The phrase, "SEI Certified, Meets NOCSAE Standard®" Shall be permanently affixed.

NOTE: You must have an executed, valid license agreement with NOCSAE to use any of the NOCSAE logos at any time. NOCSAE, the NOCSAE seals/logos, and the National Operating Committee on Standards for Athletic Equipment are registered marks and the exclusive property of the Committee. Use of the marks in any manner is prohibited without prior written permission of the NOCSAE Board of Directors.

- 8.2.3. Packaging and/or instructional literature for face protectors shall be permanently and legibly labeled in a manner such that the following information can be easily read:
- 8.2.4. A list of helmets certified as meeting the NOCSAE standard for baseball/softball batters helmets, on which the face protector has been tested and certified as meeting this Standard Performance Specification.
- 8.2.5. A warning that the face protector may be penetrated if non-standard or non-type specific balls are used.

WARNING:

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

THIS FACE PROTECTOR DOES NOT COMPLY WITH NOCSAE REQUIREMENTS UNLESS PROPERLY ATTACHED TO A FIELDER'S HEADGEAR SPECIFICALLY LISTED BY THE MANUFACTURER.

- 8.2.6. Protectors that have been tested and certified with softballs only must carry the following additional warning permanently affixed to the protector:

WARNING: NOT FOR USE WITH BASEBALLS. USE ONLY WITH 11 INCH SOFTBALLS OR LARGER.

- 8.2.7. In addition, softball only protectors must have a warning that is attached to the protector in the eye opening area in such a way that the protector is functionally unusable until the warning is removed. This warning shall convey the following information and be visible without removal of the warning:

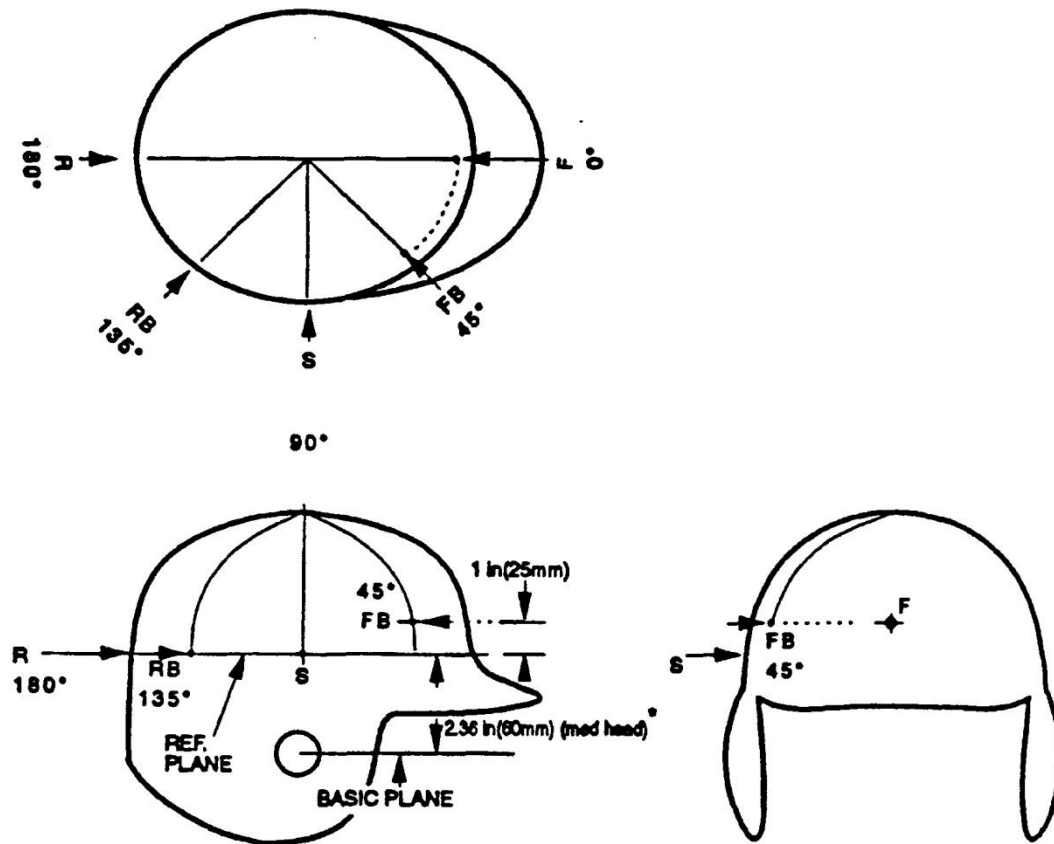
READ THIS BEFORE USE: WARNING: NOT FOR USE IN BASEBALL. THIS PROTECTOR IS TO BE USED ONLY WITH 11 INCH SOFTBALLS OR LARGER. DO NOT USE THIS PROTECTOR FOR BALLS SMALLER THAN 11 INCHES OR ANY BASEBALL.

UNAPPROVED REVISION

This standard is subject to revision at any time by the responsible technical authority and must be reviewed every five years and if not revised either reapproved or withdrawn. Your comments are invited either for revision, modification or creation of additional standards and should be addressed to NOCSAE's Executive Director. Check the web at www.nocsae.org to obtain the latest version of a standard.

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FIELDER'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.

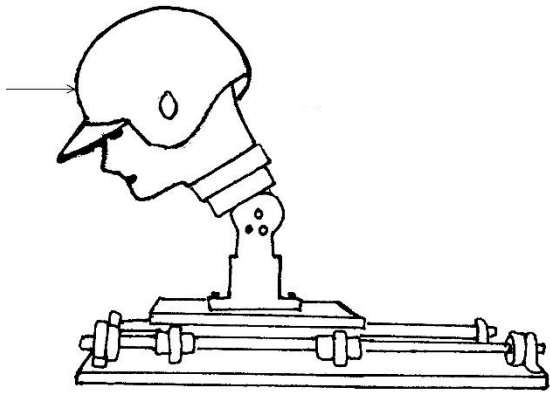
Random locations chosen must allow the rotator assembly to be locked in the position selected.

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.

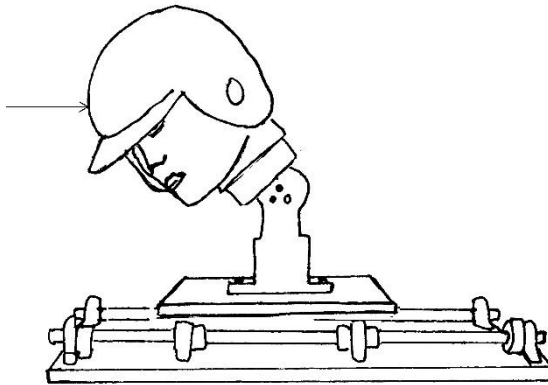
*For the small headform use 2.50 inches (64mm) and for the large headform use 3.00 inches (76mm).



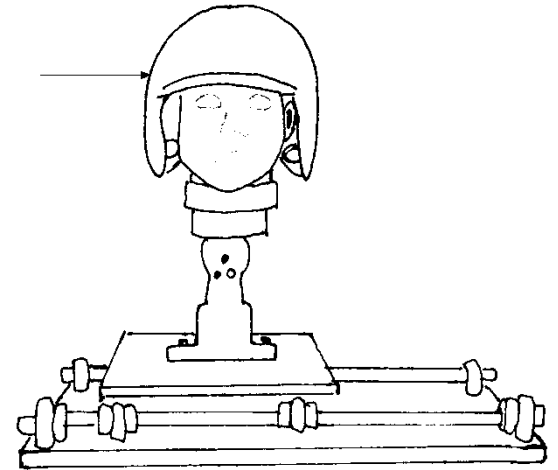
Figure 1



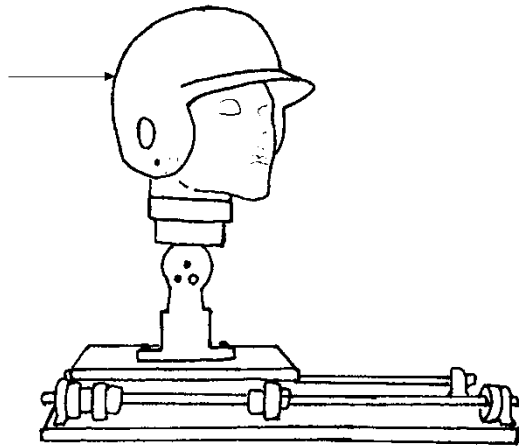
Front Impacts



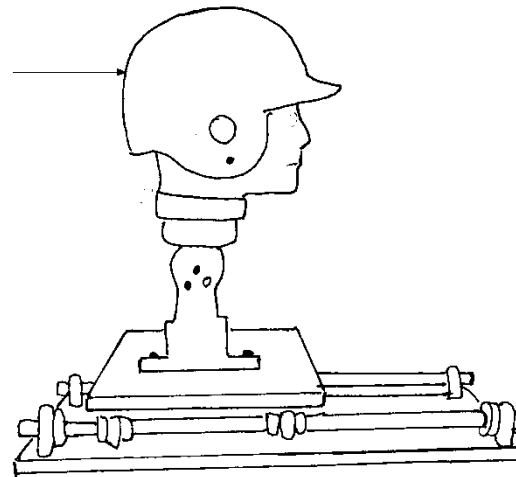
Right Front Boss Impacts



Right Side Impacts

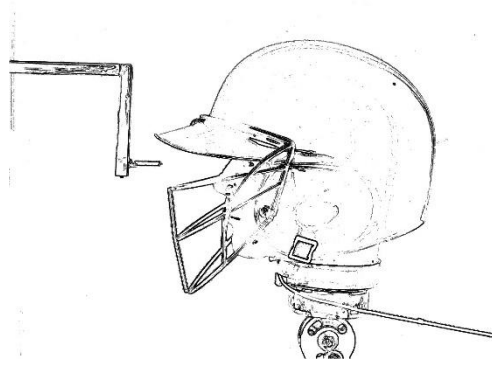


Right Rear Boss Impacts

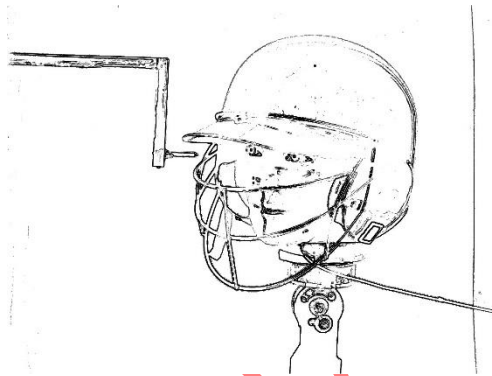


Rear Impacts

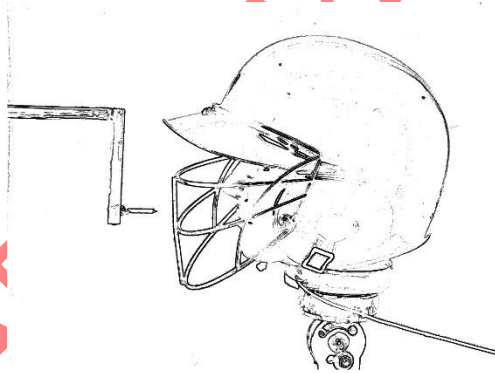
Figure 2



Typical Front Location- aimed at widest location or material of guard.



Typical 45 Degree Location- aimed at widest location or material of guard.



Typical Random Location- aimed at no contact zone (see figure 2).

Figure 3

LIMITED CONTACT/OCULAR AREA

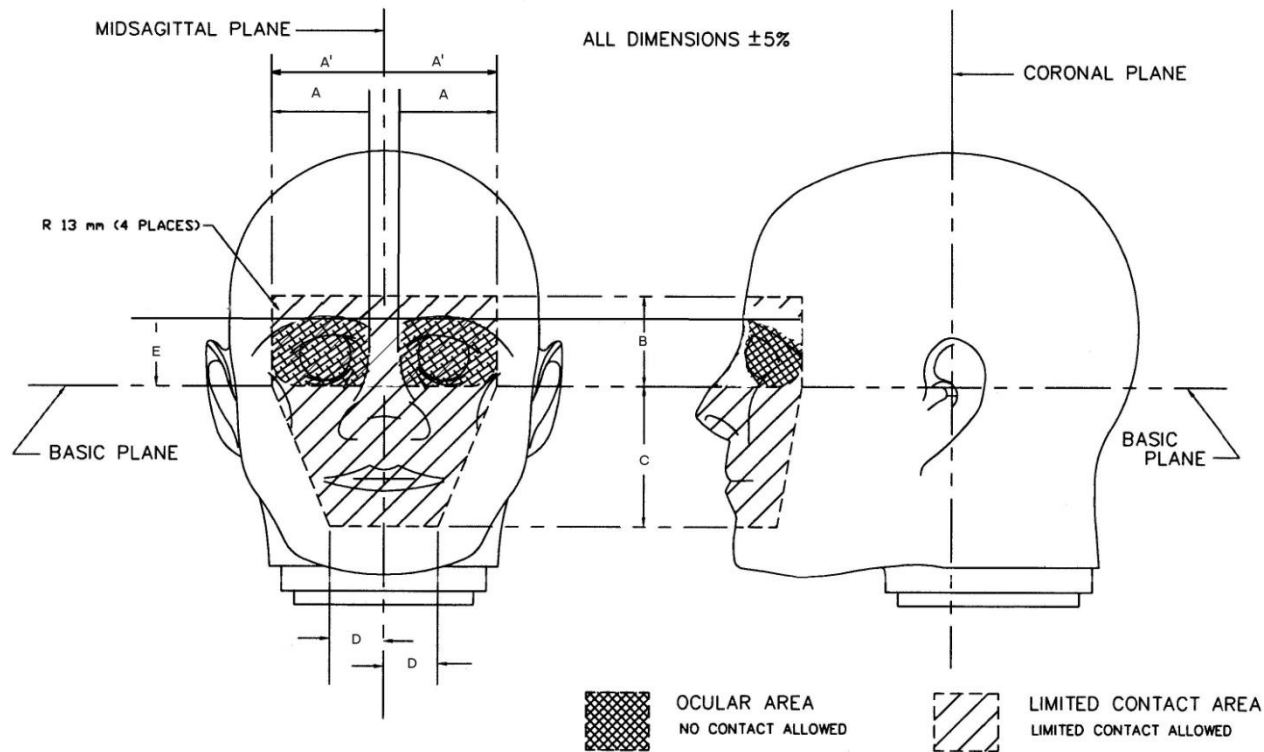


Figure 4

TABLE 2

Headform	Label	A	A'	B	C	D	E
Small	Dimension, mm (in)	44 (1.736)	54 (2.113)	41 (1.619)	64 (2.518)	26 (1.019)	32 (1.259)
Medium	Dimension, mm (in)	46 (1.811)	56 (2.205)	45 (1.772)	70 (2.756)	27 (1.062)	35 (1.378)
Large	Dimension, mm (in)	51 (1.989)	62 (2.421)	50 (1.969)	78 (3.063)	30 (1.167)	39 (1.532)

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 8, “Labels and Warnings”

APRIL 2015 MODIFICATIONS/REVISIONS

- Corrected typos of ball velocities in Table 3
- Corrected typo identification of Figure 4 listed as Figure 2

JUNE 2015 MODIFICATIONS/REVISIONS

- Updated NOCSAE seal/logo artwork

FEBRUARY 2018 MODIFICATIONS/REVISIONS

- REVISION: Removed COR requirement for baseball projectile Section 5.9.
- Added reference to section 12 NOCSAE DOC 001 to section 4
- Corrected page numbering
- Corrected references in Section 8.2.1
- Updated formatting

DECEMBER 2020 MODIFICATIONS/REVISIONS

- REVISION: Added a compression deflection upper limit of 400 lbs to the softball projectile specification

UNAPPROVED REVISION