SAE International™

SURFACE VEHICLE STANDARD

SAE J397

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Superseding J397 OCT1995

Deflection Limiting Volume—Protective Structures Laboratory Evaluation

This standard is technically equivalent to ISO 3164-1995 if normal horizontal and vertical seat adjustment is provided.

1. ***Scope***—This SAE Standard applies to operator protective structures which may commonly be a part of construction, forestry, mining, and industrial machines.

1.1 Purpose—To establish limits on deflection permissible during laboratory evaluations of certain operator protective structures, such as ROPS, FOPS, OPS, and FOG as defined in other SAE standards.

2. ***References***

2.1 Applicable Publications—The following publications form a part of this specification to the extent specified herein. Unless otherwise specified, the latest issue of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J833—Human Physical Dimensions
SAE J1163—Determining Seat Index Point (SIP)

2.1.2 ISO PUBLICATION—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ISO 3164—Earth-moving machinery—Laboratory evaluations of protective structures—Specifications for deflection limiting volume

3. ***Definitions***

3.1 Deflection Limiting Volume (DLV)—An orthogonal approximation of a large, seated, male operator as defined in SAE J833 wearing normal clothing and a protective helmet as shown in Figure 1.

3.2 SIP Reference Axis—A horizontal axis for positioning the DLV with respect to the seat index point Figure 1.

4. ***Requirements***

4.1 Accuracy—For purposes of this document, all linear dimensions of the DLV shown in Figure 1 shall have an accuracy of ±5 mm. The accuracy of locating the DLV with respect to the Seat Index Point (SIP) of SAE J1163 shall be ±13 mm.

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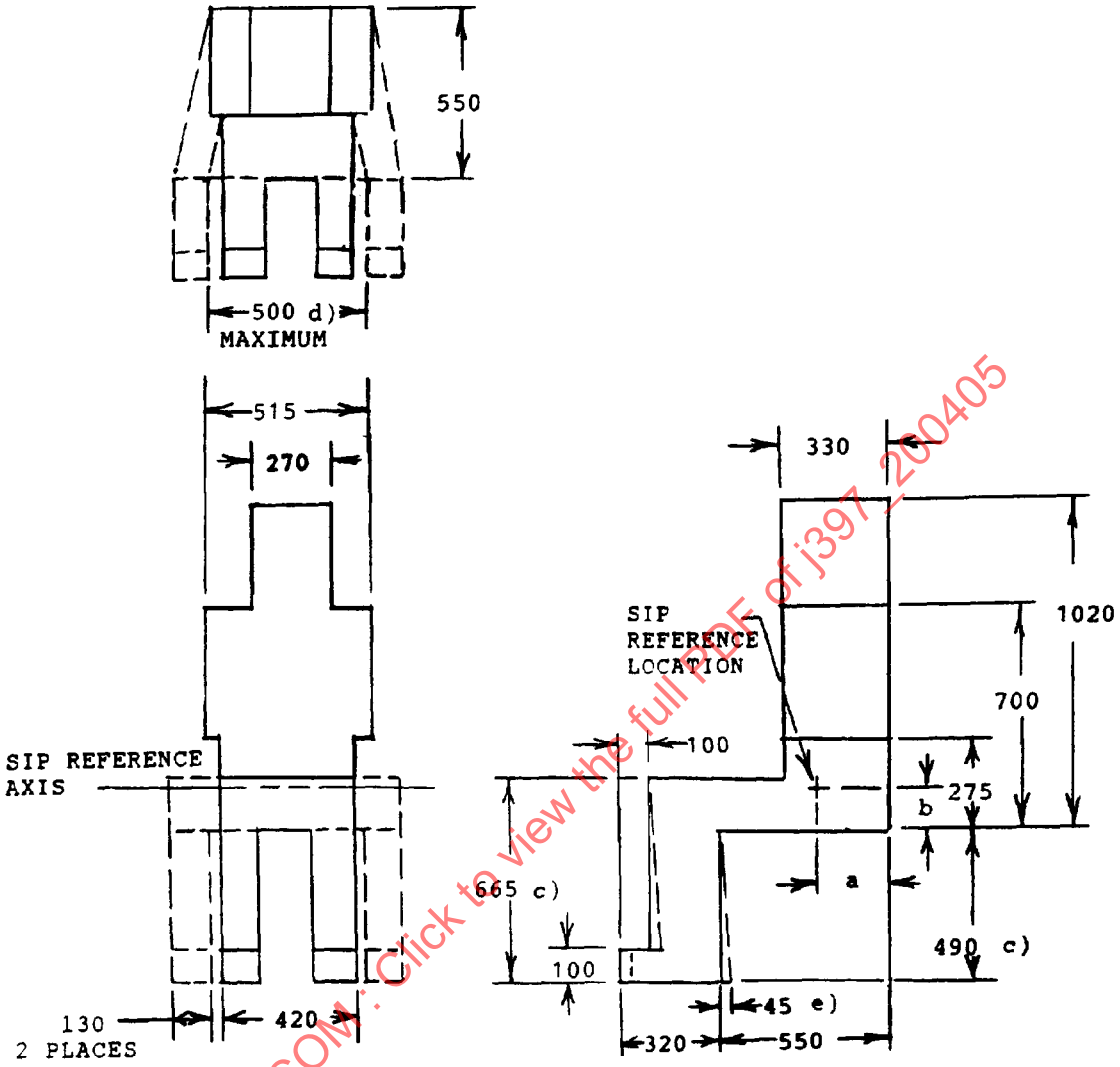

a. 1/2 USABLE HORIZONTAL SEAT ADJUSTMENT + 140 mm.
b. 1/2 USABLE VERTICAL SEAT ADJUSTMENT + 95 mm.
c. MAY BE REDUCED TO ACCOMMODATE POSITION OF FLOOR PLATES.
d. MACHINE PARTS OR CONTROLS MAY CAUSE FEET TO BE SEPARATED. AS A MINIMUM A CRUSH PROOF VOLUME MEETING THE DIMENSIONS OF A LARGE OPERATOR, PER SAE J833, MUST BE MAINTAINED FOR THE FEET AND LEGS.
e. FEET MAY MOVE 45 mm REARWARD.

FIGURE 1—DEFLECTION LIMITING VOLUME

4.2 Location of DLV

4.2.1 The DLV shall be located using the SIP, as defined in SAE J1163, as the reference point; see Figure 1.

4.2.2 For machines with a rotatable seat, multiple seats, or multiple seat locations, the seat position used by the operator to move the machine in the travel mode shall be used to locate the DLV.

4.2.3 The DLV shall be positioned so that the SIP Reference Axis (see Figure 1) passes through the SIP. The DLV shall be centered transversely in the seat location with its principal axes horizontal and vertical (see central vertical plane in SAE J1163).

4.2.4 The location of the DLV shall remain coincidental with the SIP even though the SIP may move during any or all of the laboratory loadings.

4.3 Intrusion of Controls—Machine controls, such as foot pedals, and their components normally positioned in the DLV are not considered to violate the DLV.

PREPARED BY THE SAE OFF-ROAD MACHINERY TECHNICAL COMMITTEE SC12—
MACHINE TEST PROCEDURES