

SURFACE VEHICLE STANDARD

SAE J1163

REV.
JUN91

Issued 1976-10
Revised 1991-06

Superseding J1163 JAN80

Submitted for recognition as an American National Standard

(R) DETERMINING SEAT INDEX POINT

Foreword—This SAE Standard is technically equivalent to ISO 5353, and uses it as the guide, except without its H-Point annex.

1. Scope—This SAE Standard specifies a method and the device for use in determining the position of the Seat Index Point (SIP) for any kind of seat.

1.1 Purpose—This SAE document provides a uniform method for defining the location of the SIP in relation to some fixing point on the seat.

1.2 Field of Application—This SAE document is applicable to seats designed for off-road self-propelled machines. The SIP can be determined on a seat by itself or with the seat located in its operating environment on the machine. The SIP is a characteristic of the seat; therefore, it can be specified by the seat manufacturer.

2. References

2.1 Applicable Documents—The following publications form a part of this specification to the extent specified herein.

2.1.1 SAE PUBLICATIONS—Available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 15096-0001.

SAE J826 MAY87—Devices for Use in Defining and Measuring Vehicle Seating Accommodations

SAE J899 DEC88—Operator's Seat Dimensions for Off-Road Self-Propelled Work Machines

SAE Information Report: Evaluation of the Seat Index Point Checking Device for Tractor (D. C. Hammond) 15 April 1976

2.1.2 ISO PUBLICATIONS—Available from American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

ISO 3462:1980—Tractors and machinery for agriculture and forestry—Seat reference point—Method of determination

ISO 5353:1978—Earth-moving machinery, and tractors and machinery for agriculture and forestry—Seat index point. Amendment 01:1981. Amendment 02:1984.

ISO/TC127/SC2 (Italy—22): Correlation between the seat index point and the H-point—October 1975

2.1.3 BRITISH STANDARDS—Available from British Standards Institute, 2 Park Street, London W1A 2BS.
BSI Document 75/13289—Seat Index Point—18 December 1975

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

2.2 Definitions

2.2.1 SEAT INDEX POINT (SIP)—The point on the central vertical plane as determined by the device shown in Figure 1 when installed in the seat as specified in 3.3.

The SIP as established and defined by this SAE document can be considered, for operator work place design purposes, to be equivalent to the intersection on the central vertical plane through the seat centerline of the theoretical pivot axis between a human torso and thighs.

2.2.2 FIXING POINT—The fixing point is a point that is specified by the manufacturer to which the SIP is referenced. See Figure 2 for an example.

2.2.3 MULTIPLE FUNCTION SEATS—Some seats are designed to locate and fix an operator to perform more than one function with a given machine, e.g., Backhoe/Loader, where, facing in one direction the loading function is performed and in a rotated position, the backhoe function is performed.

3. Technical Requirements

3.1 Device for Determining of Seat Index Point (SIP)—The device for determining the SIP shall comply with Figure 1. The mass of the device shall be $6 \text{ kg} \pm 1$. The work surfaces of the device shall be of hardwood that has been sanded with 200 or finer grit paper or the equivalent and polished to provide minimum friction with the muslin cloth mentioned in 3.3.1.3.

3.2 Adjustment of Seat When Determining the Seat Index Point—When the relevant adjustments are a part of the seat and its suspension, the seat shall be adjusted according to the following sequential steps before determining the SIP:

3.2.1 SEAT ADJUSTMENT—All fore, aft, vertical, and angular adjustments shall be placed in their center position. When no center position is possible, the nearest adjustment that will move the SIP device upward or rearward of center shall be used.

3.2.2 SUSPENSION SYSTEM—Block the suspension system according to the manufacturer's instruction. If such instruction is not provided, block the suspension system at the midpoint of its oscillation range.

3.3 Method of Determining the Seat Index Point (SIP)—The SIP shall be determined by using the device illustrated in Figure 1 and applying the following procedures:

3.3.1 SEAT CUSHION PREPARATION—Allow sufficient time to insure the seat reaches a room temperature of $20^\circ\text{C} \pm 2$ before starting the measurement procedure.

3.3.1.1 The seat shall be on a level surface.

3.3.1.2 A 68 to 79 kg person shall sit in the seat twice for 1 min intervals to flex the seat and back cushions. The seat should remain unloaded for a minimum period of 30 min before starting the measurement procedure.

3.3.1.3 Cover the seat with a single layer of muslin cloth of sufficient size to prevent direct contact and minimize friction between the cushion surfaces and the measurement device. Care must be taken to prevent the cloth from influencing the positioning of the device.

3.3.2 DEVICE PLACEMENT—Place the device, without additional masses, laterally central on the seat cushion, pushing against the back cushion. See Figure 2.

3.3.2.1 Add masses to bring the total mass of the device from $6 \text{ kg} \pm 1$ to $26 \text{ kg} \pm 1$; the vertical force center of the added masses shall be 40 mm in front of the SIP mark on the horizontal section of the device. See Figure 1.

3.3.2.2 To obtain a good fit between the seat cushion, the back cushion, and the SIP measuring device, alternately apply and release a horizontal and rearward force of approximately 100 N at the location noted in Figure 1, and rock the device from side to side.

3.3.2.3 Add further masses to bring the total mass of the device from $26 \text{ kg} \pm 1$ to $65 \text{ kg} \pm 1$.

NOTE: A 75 kg operator approximates the 65 kg weighted device on the seat.

3.3.2.4 Repeat the alternate loading, releasing, and the rocking of the device as defined in 3.3.2.2, checking to make sure the device is laterally central and level on the seat.

3.3.3 MEASUREMENT—Measurements shall be made on each side of the SIP measuring device at points equal distance from the central vertical plane. See Figure 2. Average the values. Record within ± 1 mm the coordinate dimensions of the SIP from the fixing point on the seat assembly, see Figure 3, that is defined by the manufacturer.

3.3.4 MULTIPLE FUNCTION SEATS—If the location of the SIP relative to the fixing point cannot be readily calculated, then repeat 3.2 and 3.3 for each of the positions.

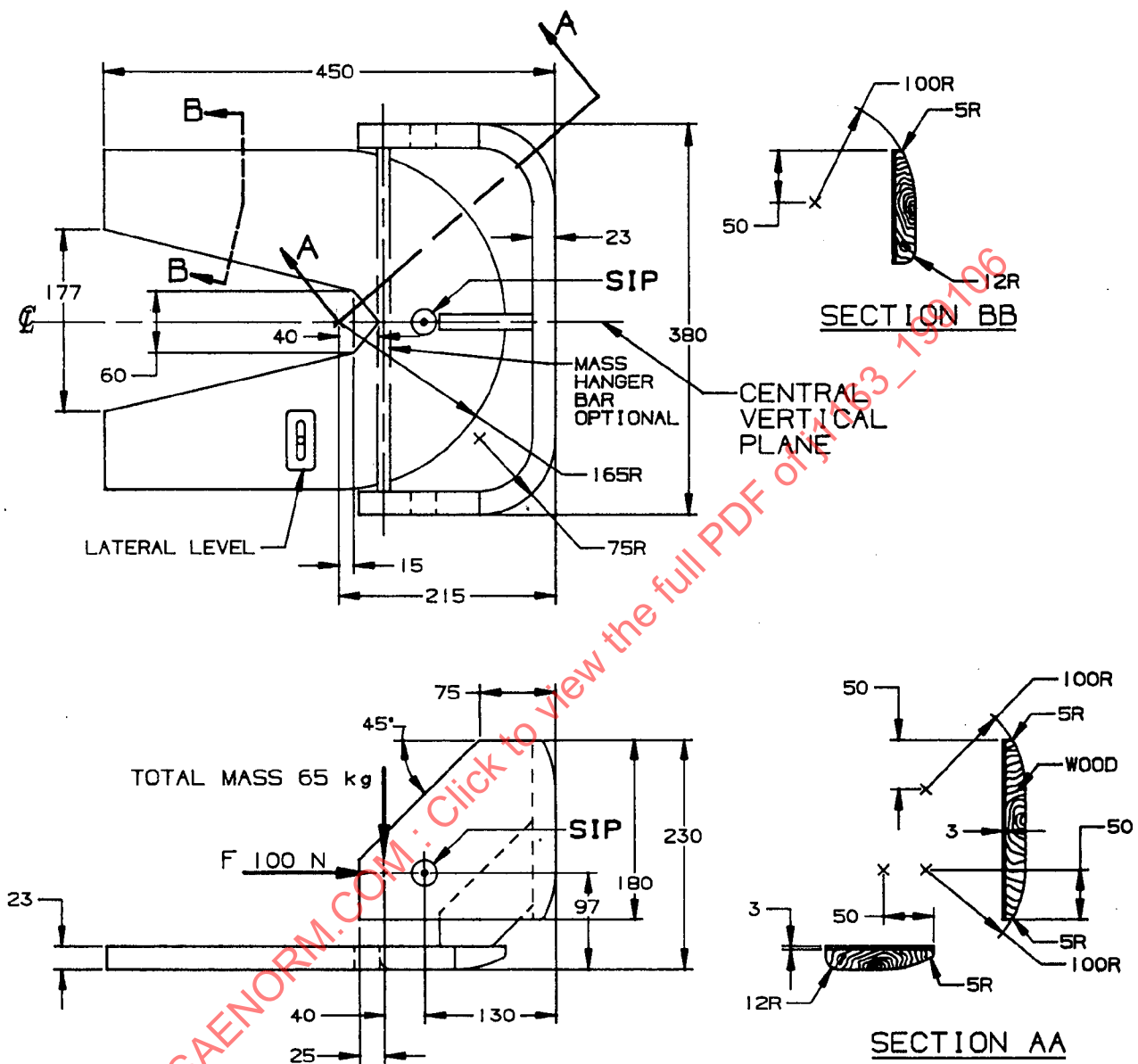
3.4 Report—The report shall include the following information:

- a. Reference to this SAE document.
- b. Any test conditions or adjustments different from those specified in this SAE document shall be fully described.
- c. A drawing or sketch of the seat assembly showing the coordinate dimensions between the fixing point and the SIP. See Figure 3 for an example.
- d. Description of the seat adjustment ranges available relevant to 3.2.

4. Notes

4.1 Marginal Indicia—The (R) is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. If the symbol is next to the report title, it indicates a complete revision of the report.

PREPARED BY THE SAE HUMAN FACTORS TECHNICAL
COMMITTEE SC4—OPERATOR SEATING AND RIDE



(LINEAR DIMENSIONS IN MILLIMETERS)

FIGURE 1—SEAT INDEX POINT DEVICE

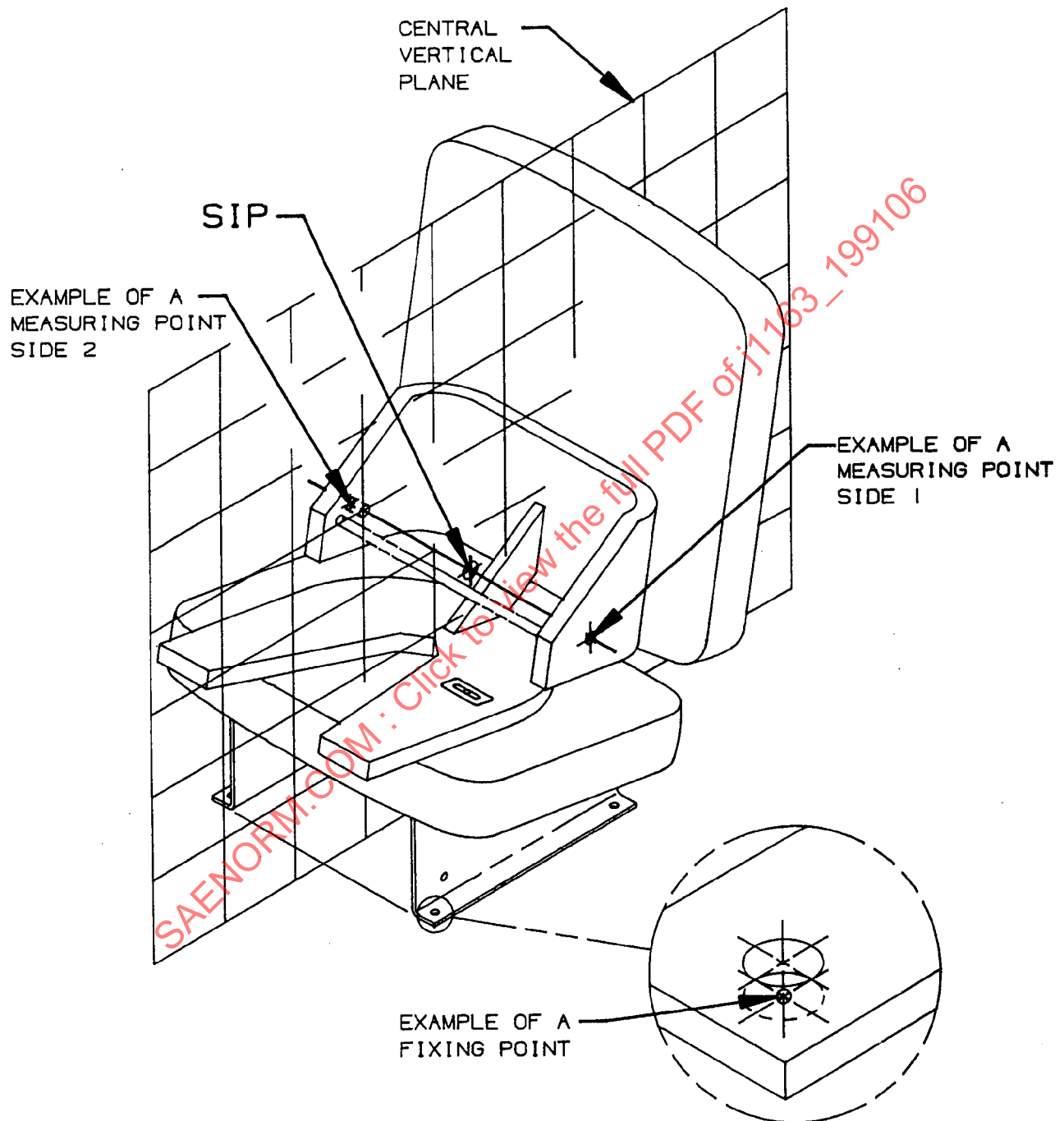


FIGURE 2—SEAT WITH SIP DEVICE

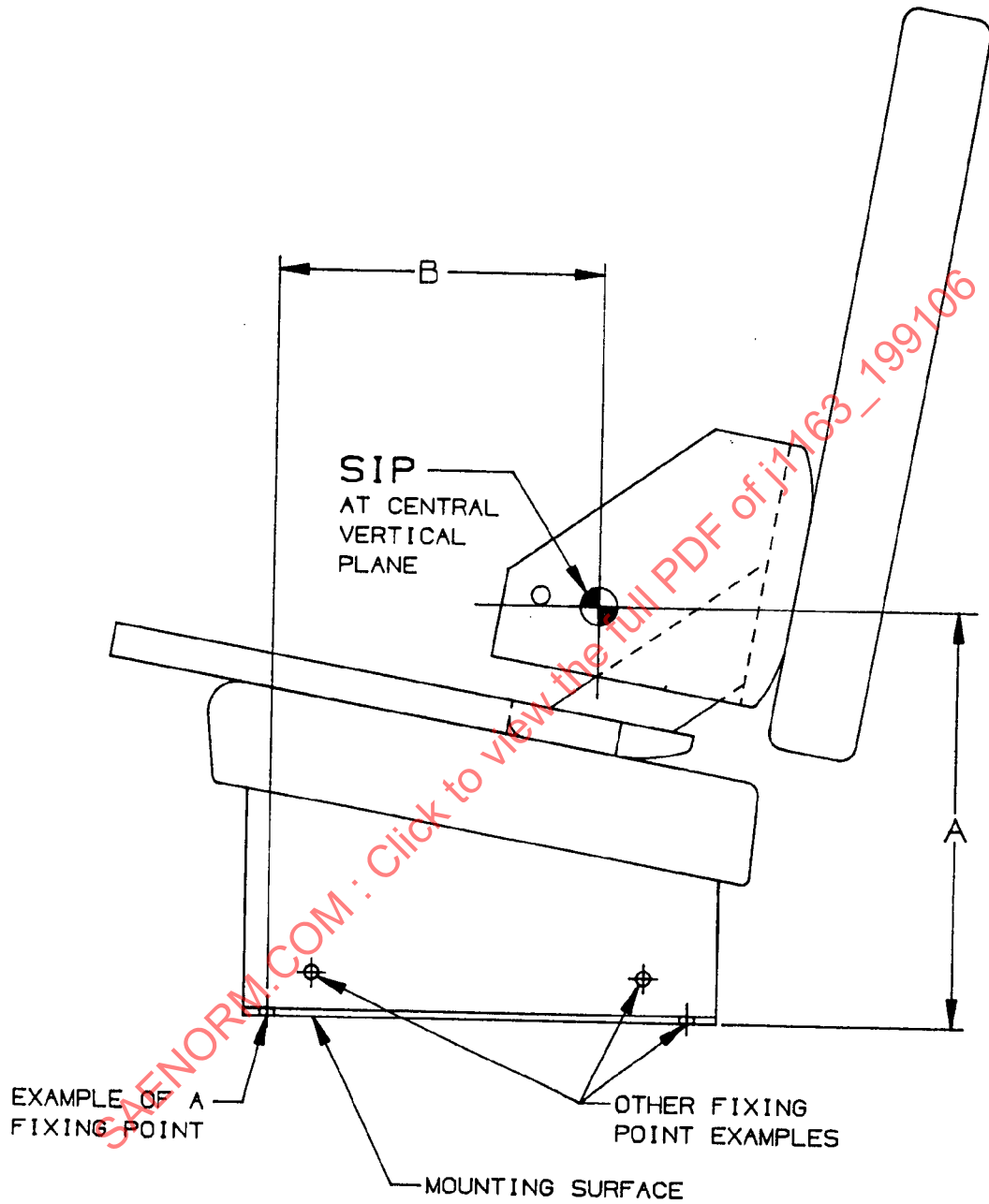


FIGURE 3—SEAT DIMENSIONS