SURFACE VEHICLE STANDARD

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Superseding J899 MAY2012

(R) Operator's Seat Dimensions for Off-Road Self-Propelled Work Machines

RATIONALE

This revision of the standard will encompass the update of reference standards and remove obsolete references.

NOTE: This standard is similar to ISO 4253.

1. SCOPE

For off-road work machines listed in SAE J1116.

1.1 Purpose

This SAE Standard provided seat dimensions and adjustments for the design of operator's seat.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J826 Devices for Use in Defining and Measuring Vehicle Seating Accommodation

SAE J1116 Categories of Off-Road Self-Propelled Work Machines

SAE J1163 Determining Seat Index Point

2.1.2 ISO Publications

Copies of these documents are available online at http://webstore.ansi.org/.

ISO 3411 Earth-moving machinery - Physical dimensions of operators and minimum operator space envelope

ISO 4253 Agricultural tractors - Operator's seating dimensions

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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For more information on this standard, visit
https://www.sae.org/standards/content/J899_202102

ISO 5353 Earth-moving machinery - Seat index point

ISO 6165 Earth-moving machinery - Basic types - Identification and terms and definitions

ISO 11112 Earth-moving machinery - Operator's seat - Dimensions and requirements

2.1.3 Henry Dreyfuss Associates

Humanscale

2.1.4 Damon, Stoudt, McFarland

The Human Body in Equipment Design

3. DISCUSSION

3.1 All seat dimensions and adjustments (if provided), are referenced to the SIP as determined by SAE J1163.

3.2 Nominal values (see Note 1 of Table 1 for definition) are included wherever possible and their use will generally provide maximum ergonomic benefit.

Table 1 - Seat dimensions and adjustments

Item	Description (see Figure 1)	Notes	Max[1] mm	Nom[2] mm	Min mm
B	Seat Cushion Length		315	265	215
C	Seat Cushion - Angle	[3]	15 degrees	10 degrees	5 degrees
	- Adjustment	[4]		±5 degrees	±3 degrees
D	Seat Cushion Width			500	430
E	Fore and Aft Adjustment	[5]		150	100
F	Vertical Adjustment	[5]		75	60
G	Back Cushion Height	[6]		400	150
H	Back Cushion Width	[7]		500	300
J	Back Cushion Angle	[8]	15 degrees	10 degrees	5 degrees
	- Adjustment	[4]		±5 degrees	±3 degrees
K	Armrest Height	[9]	160	140	95
L	Armrest Length		190	140	90
M	Armrest Lateral Spacing		550	500	450
N	Armrest Width			75	50
P	Armrest Depth			100	50
Q	Lumbar Support	[10]	145	130	115

[1] Where no maximum value is listed, the nominal value may be increased arbitrarily.
[2] A value which might have the broadest general acceptance.
[3] Angle of the top of the seat base of the SIP device after being positioned and weighted using the SAE J1163 procedure.
[4] Angle adjustment, if provided, is about the mid-position, not necessarily a latched position.
[5] Adjustment values are total adjustments.
[6] Where free swing of shoulders and arms over the top of the back is necessary or appropriate for visibility when traveling in the reverse or when controlling rear mounted implements, the maximum back cushion height should be 300 mm.
[7] Where free aft swing of the elbows is desired, the maximum width should be 330 mm.
[8] Measure the angle of the centerline of the back cushion. If a lumbar support is provided, it should be set at the mid-range position, and the back angle measured on centerline of the back cushion above the lumbar support. For back cushions with the lumbar support, the allowable angles of Table 1 may be increased by 5 degrees or more.
[9] Armrests attached to the seat should move with the vertical and horizontal seat adjustments. The ability to adjust the armrests vertically to the maximum-minimum values of (K) is desirable. (K) is measured to the top of the pad (if used) at the lateral centerline of the armrest.
[10] Radius of curvature of the lumbar support in the vertical plane should be nominally 300 mm with a minimum of 150 mm.

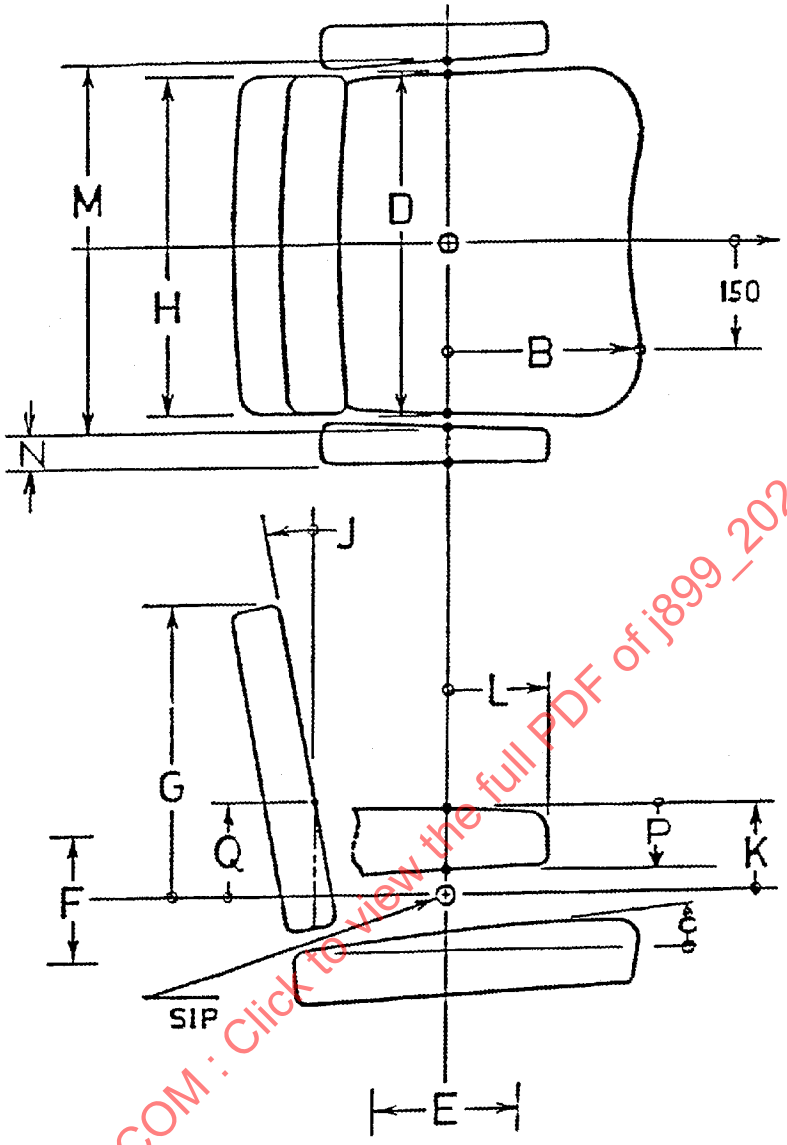

Figure 1 - Seat dimensions and adjustments

3.3 The nominal values are based on the body dimensions of SAE J833 and will accommodate operator sizes from the 5th percentile female through the 95th percentile male of that document. Dimensions or adjustments (or use of), other than those in this standard may be used if they will provide equivalent or greater ergonomic benefit. Consideration may be given for specific controls or operator requirements (that is, smaller worldwide population body dimensions, etc.).

3.4 On work machines where a higher SIP is desirable, a reduced back and seat cushion angle should be considered.

3.5 Armrests can be rotated up or down or translated down to provide ingress or egress.

3.6 Operator seats can be provided with a swivel or tilt to improve both operator work position and ingress or egress.

3.7 A means of securing the work positions of the seat shall be provided to prevent unwanted seat movement during operation.

3.8 On the initial design of the seat or operator area, good use can be made of the two-dimensional mannequin of SAE J826 for approximate H-Point/SIP location.