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SURFACE VEHICLE STANDARD

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Submitted for recognition as an American National Standard

OPERATOR'S SEAT DIMENSIONS FOR OFF-ROAD SELF-PROPELLED WORK MACHINES

NOTE: This Standard is similar to ISO 4253.

Foreword—This Document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. Scope—For off-road work machines as listed in SAE J1116.

1.1 Purpose—This SAE Standard provides seat dimensions and adjustments for the design of operator's seat.

2. References

2.1 Applicable Publications—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, 400 Commonwealth Drive, Warrendale, PA 15096-0001

SAE J826 MAY87—Devices for Use in Defining and Measuring Vehicle Seating Accommodation
SAE J833 DEC83—USA Human Physical Dimensions
SAE J1116 JUN86—Categories of Off-Road Self-Propelled Work Machines
SAE J1163 JAN80—Determining Operator Seat Location on Off-Road Work Machines

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

ISO 4253-1977—Agricultural tractors—Operator's seating dimensions
ISO 5353-1978—Earthmoving machinery—Seat index point

2.1.3 HENRY DREYFUSS ASSOCIATES—

Humanscale

2.1.4 DAMON, STOUDT, MCFARLAND—

The Human Body in Equipment Design

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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 deg	10 deg	5 deg
	- Adjustment	(4)	—	± 5 deg	±3 deg
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 deg	10 deg	5 deg
	- Adjustment	(4)	—	± 5 deg	± 3 deg
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.
7. Where free aft swing of the elbows is desired, the maximum width should be 330.
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 deg 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 with a minimum of 150.

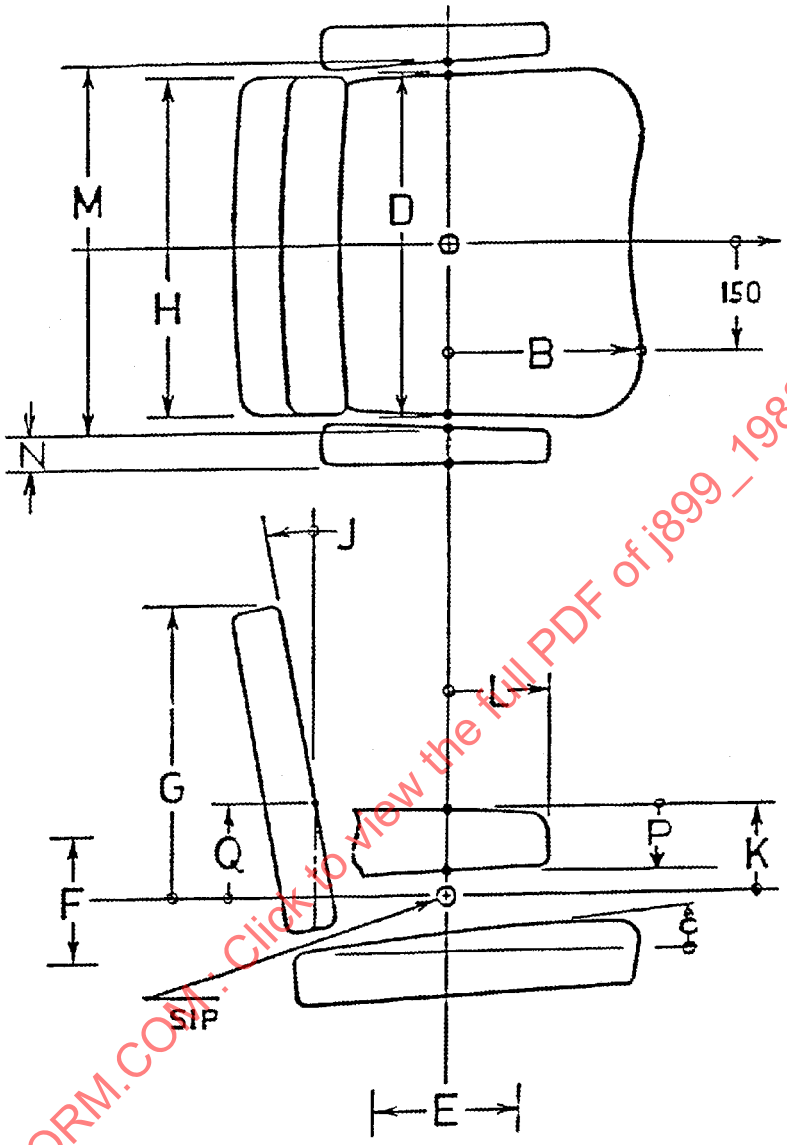

FIGURE 1—SEAT DIMENSIONS AND ADJUSTMENTS

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 pivot 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.

4. Notes

4.1 **Marginal Indicia—**The change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

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