Australian Standard®

EARTH-MOVING MACHINERY—HUMAN DIMENSIONS

Part 2—PHYSICAL DIMENSIONS OF OPERATORS AND MINIMUM OPERATOR SPACE ENVELOPE

(ISO Title: Earth-moving machinery—Human physical dimensions of operators and minimum operator space envelope)

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Australian Mining Industry Council
Bureau of Steel Manufacturers of Australia
Construction Equipment Importers and Manufacturers of Australia
Department of Administrative Services
Department of Conservation, Forests and Lands, Vic.
Department of Defence
Department of Forestry, Qld.
Department of Industrial Relations and Employment, N.S.W.
Department of Labour, Vic.
Department of Mines, Qld.
Earth-movers and Road Contractors Association of Australia
Forestry Commission of New South Wales
Local Government Engineers Association of New South Wales
Metal Trades Industry Association of Australia
National Association of Australian State Road Authorities
Rural Water Commission, Vic.
Safety Institute of Australia
Telecom Australia
Tractor and Machinery Association of Australia
Water Board, Sydney

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FOREWORD

1. This Australian Standard corresponds with ISO 3411—1982, *Earth-moving machinery—Human physical dimensions of operators and minimum operator space envelope.*
2. Introduction to and complete listing of the SAA series of earth-moving machinery Standards (AS 2951 to AS 2958) is available on request.
3. For the purpose of this Australian Standard the words 'International Standard' should be replaced by 'Australian Standard'.
4. ISO Standards referred to in this Standard correspond with the following Australian Standards:

ISO Standard	Australian Standard
ISO 3449	AS 2294
ISO 3471	AS 2294
ISO 5353	AS 2953.3
ISO 6682	AS 2956.5

Earth-moving machinery—Human dimensions
Part 2—Physical dimensions of operators and minimum operator space envelope

1 Scope

This International Standard defines the dimensions of male operators of earth-moving machinery and specifies the minimum normal operating space envelope around the operator for operator enclosures (cabs, ROPS, FOPS) generally applicable to earth-moving machinery.

2 Field of application

This International Standard is intended as a guide for determining the minimum normal operating space envelope around the operator for operator enclosures (cabs, ROPS, FOPS) generally used on earth-moving machinery.

3 References

ISO 3449, *Earth-moving machinery — Falling-object protective structures — Laboratory test and performance requirements.*

ISO 3471, *Earth-moving machinery — Roll-over protective structures — Laboratory test and performance requirements.*

ISO 5353, *Earth-moving machinery and tractors and machinery for agriculture and forestry — Seat index point.*

ISO 6682, *Earth-moving machinery — Zones of comfort and reach for controls.*

4 Physical dimensions of operators

4.1 General

The physical dimensions of small, medium and large operators are given in figures 2 and 3 for the standing and sitting operator. The body pivot dimensions for small, medium and large operators are given in figure 4. The dimensions given relate to the seat index point (SIP).

4.2 Definitions (see figure 1)

4.2.1 small operator: The small operator represents the fifth percentile — only 5 % of the worldwide operator population is smaller than the dimensions given.

4.2.2 medium operator: The medium operator represents the fiftieth percentile — 50 % of the worldwide operator population is smaller and larger than the dimensions given.

4.2.3 large operator: The large operator represents the ninety-fifth percentile — only 5 % of the worldwide operator population is larger than the dimensions given.

NOTES

1 The large and small operators were derived by combining national data to represent the worldwide operator population. Therefore a small number of the smallest and largest national operators will be smaller or larger than the 5th and 95th percentile worldwide operator population.

2 Nominally 75 mm of vertical seat adjustment is recommended to accommodate these smaller or larger operators. See ISO 6682, annex A.

4.3 Dimensions

The dimensions given include an allowance for the height of shoes or boots and the thickness of work clothing. In the “large operator (arctic clothed)” column in tables of figures 2, 3 and 4, the dimensions are of the uncompressed clothing with heavy mittened hands and the head covered with a helmet and parka hood.

4.4 Erect posture

All dimensions are of an operator in an erect posture. A normal posture is “slumped” and the dimensions will be slightly less.

Stature and overhead reach will be reduced about 15 mm, while sitting height and sitting eye height will be reduced about 25 mm.

5 Minimum operating space envelope

5.1 The minimum normal operating space envelope around the clothed operator for operator enclosures (cabs, ROPS, FOPS) is given in figure 5 for a seated operator and in figure 6 for a standing operator. The outline of the space envelope does not imply the shape of the enclosure.