INTERNATIONAL STANDARD

ISO 6746-1

Second edition
1987-11-01

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Earth-moving machinery — Definitions of dimensions and symbols —

Part 1 : Base machine

Engins de terrassement — Définitions des dimensions et des symboles —

Partie 1 : Engin de base

Reference number
ISO 6746-1 : 1987 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6746-1 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*.

This second edition cancels and replaces the first edition (ISO 6746-1 : 1982), of which it constitutes a technical revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Earth-moving machinery — Definitions of dimensions and symbols —

Part 1 : Base machine

1 Scope and field of application

This part of ISO 6746 defines terms and symbols relating to dimensions of the base machine of earth-moving machinery.

It applies to the basic types of earth-moving machines as defined in ISO 6165.

2 References

ISO 6165, *Earth-moving machinery — Basic types — Vocabulary*.

ISO 6746-2, *Earth-moving machinery — Definitions of dimensions and symbols — Part 2 : Equipment*.

3 General definitions

For the purposes of this International Standard, the following definitions apply.

3.1 three-dimensional reference system : See annex A.

3.2 ground reference plane (GRP) : Zero *Z* plane on which the machine is placed for the measurements.

The plane is :

a) for wheeled machines, a hard level surface;

b) for crawler machines :

1) tractors, pipelayers

— the face for grouser-type shoe (see *H*5),

2) loaders, excavators

— the tip of the grouser (see *H*5),

3) low ground pressure

— for triangular section shoe, one-half of the distance between the track link bolting surface and the tip of the grouser (see *H*5).

3.3 base machine : Machine, without equipment, as described by the manufacturer's specifications.

The machine should be provided with the necessary mountings to secure equipment as detailed in ISO 6746-2.

4 General

Annexes B, C, D, E and F give the symbols and term definitions relating to the dimensions of the base machine of earth-moving machinery.

5 Coding system

Each dimension listed in annexes B, C, D, E and F is assigned a code which is composed of a letter (see 5.1) and an International Standard reference number (see 5.2).

5.1 One capital letter indicates a dimension, as follows :

H = height dimensions

W = width dimensions

L = length dimensions

R = radial dimensions

A = angular dimensions

5.2 An International Standard reference number indicates the specific machine (see ISO 6746-1, ISO 7131, ISO 7132, ISO 7133, ISO 7134, ISO 7135 and ISO 7136 as applicable).

Annex A

Three-dimensional reference system — Definitions

A.1 Reference system

This annex defines the three-dimensional reference system used to determine dimensions of earth-moving machines.

The system shall not be used for commercial documents.

2 Definitions

The following definitions are specific to the three-dimensional reference system.

A.2.1 zero *Y* plane : Vertical plane which passes through the longitudinal centreline of the machine.

A.2.2 *X* plane : Any vertical plane normal to the *Y* plane.

A.2.3 *Z* plane : Any horizontal plane normal to the *X* and *Y* planes.

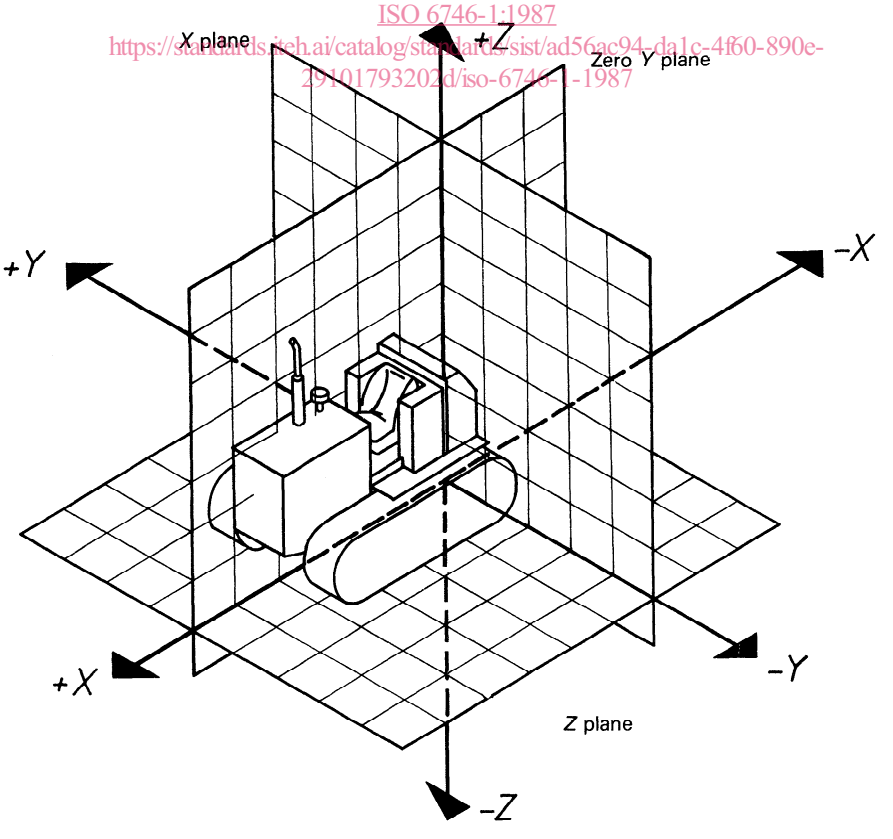
A.2.4 positive coordinate : The positive direction is forward of the zero *X* plane, right of the zero *Y* plane, and above the zero *Z* plane.

NOTES

1 The intersection of the *X*, *Y*, *Z* axes (zero planes) is normally located at a well defined base point (i.e. SIP for a seat; crankshaft centreline for an engine; sprocket or rear axle centreline for a tractor; ground line for machine measurements).

2 If only components (e.g. engine, seat) are shown, the location and positive direction of the axis from the intersection of the *X*, *Y*, *Z* axes (zero planes) assume the normally expected orientation of the component to a machine (i.e. number one cylinder of engine to the front of the machine, seat facing to the front).

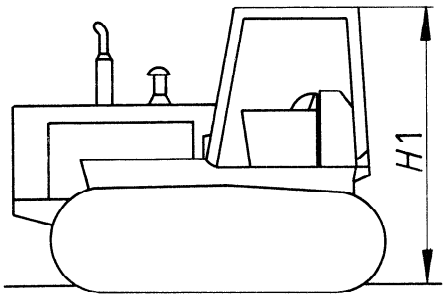
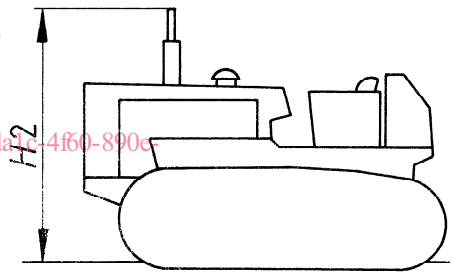
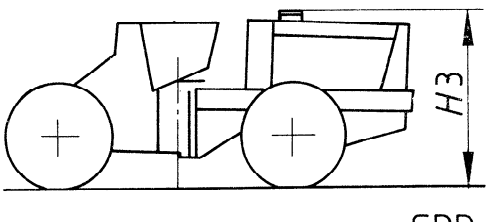
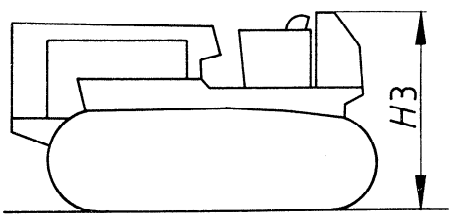
3 If a machine and/or its equipment are shown, a machine driving from right to left shall be shown.



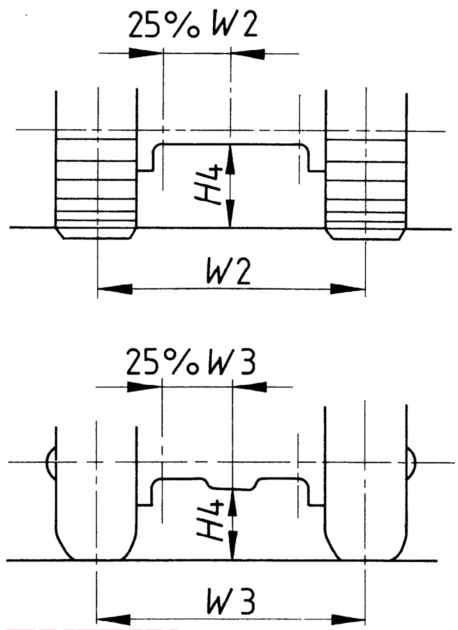
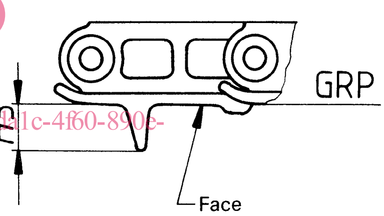
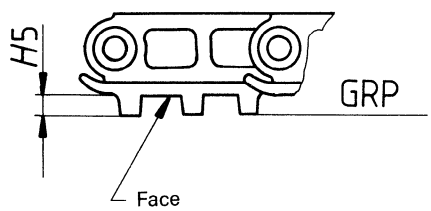
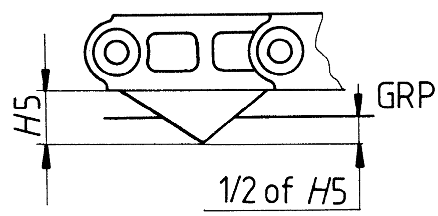
Annex B

Height dimensions — Terms and symbols

NOTE — For three-axle dumpers and scrapers, symbols *H*1 to *H*4 apply only to the tractor part.

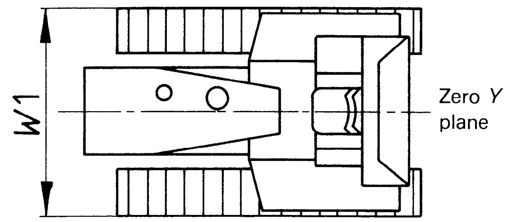
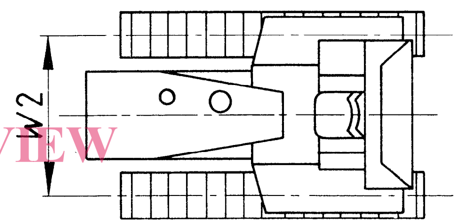
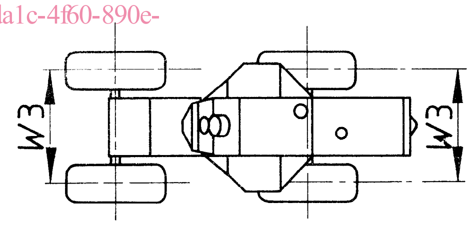
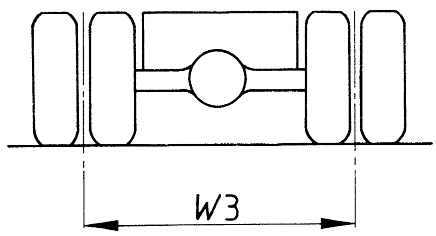
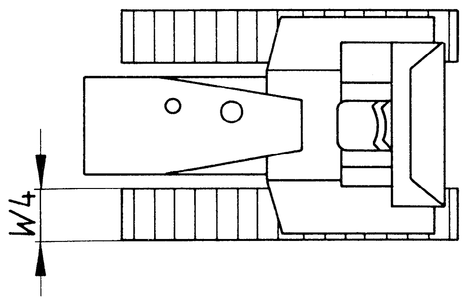
Symbol	Term	Definition	Drawing
*H*1	Maximum total height	Distance on *Z* coordinate between the GRP and the highest point of the machine with cab or ROPS [1].	
*H*2	Maximum height	Distance on *Z* coordinate between the GRP and the highest point of the machine without cab or ROPS.	
*H*3	Shipping height	Distance on *Z* coordinate between the highest point on the machine after removal of parts normally removed for shipping and (for wheeled machines) the GRP and (for crawler machines) the tip of the grouser.	 GRP 

1) Roll-over protective structure.

Symbol	Term	Definition	Drawing
*H*4	Ground clearance	Distance on *Z* coordinate between the GRP and the central part of the machine. The central part of the machine is defined as 25 % of the track gauge (*W*2) or tread (wheel track) (*W*3) to either side of the zero *Y* plane.	
*H*5	Grouser height	Distance on *Z* coordinate between two *Z* planes passing through the face of the shoe and the tip of the grouser. For a triangular section shoe, it is the distance between two *Z* planes passing through the track link bolting surface and the tip of the grouser.	 1) Tractors, pipe layers  2) Loaders, excavators  3) Low ground pressure

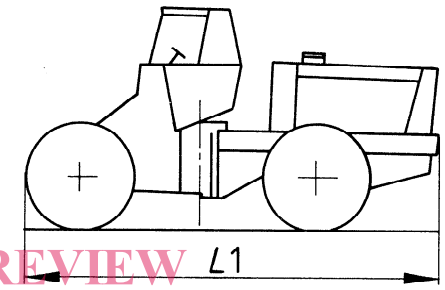
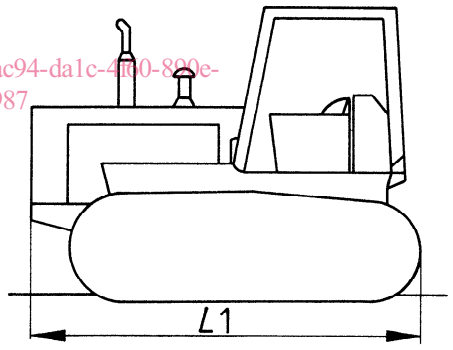
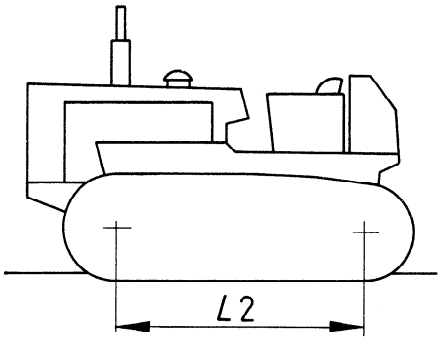
Annex C

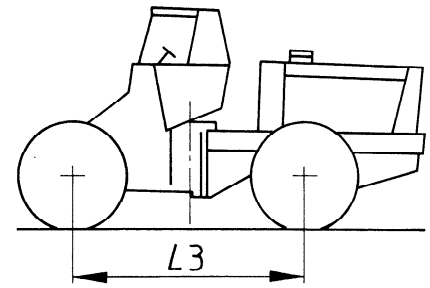
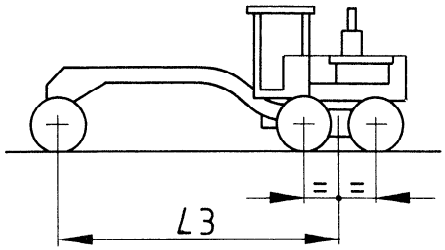
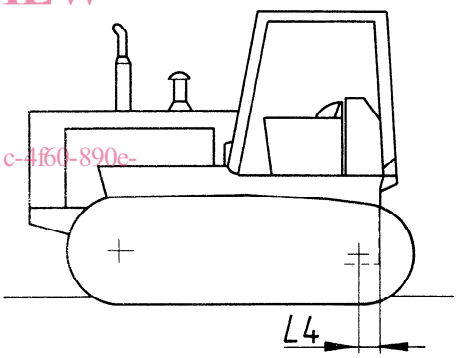
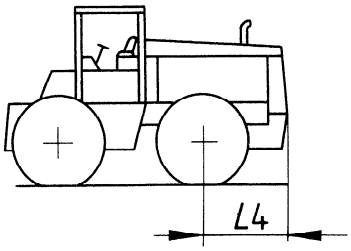
Width dimensions — Terms and symbols

Symbol	Term	Definition	Drawing
*W*1	Maximum width	Distance on *Y* coordinate between two *Y* planes passing through the farthest points of the machine on both sides of zero *Y* plane. For three-axle dumpers and scrapers, this applies only to the tractor part.	
*W*2	Track gauge	Distance on *Y* coordinate between two *Y* planes passing through the mid-width of the sprocket teeth.	
*W*3	Tread (wheel track)	Distance on *Y* coordinate between two *Y* planes passing through the tyre centreline. In the case of dual wheels it is the distance between two *Y* planes passing through the centreline of the dual wheels. If the machine has more than one tread (wheel track) dimension, each should be specified.	 
*W*4	Track shoe width	Distance on *Y* coordinate between two *Y* planes passing through the extreme lateral points of the same track shoe.	

Annex D

Length dimensions — Terms and symbols

Symbol	Term	Definition	Drawing
$L1$	Maximum length	Distance on X coordinate between two X planes passing through the farthest points on the front and rear of the machine. For three-axle dumpers and scrapers, this applies only to the tractor part.	 
$L2$	Crawler base	Distance on X coordinate between two X planes passing through the sprocket axis and the idler axis.	

Symbol	Term	Definition	Drawing
$L3$	Wheel-base	Distance on X coordinate between two X planes passing through the centres of the front wheels and the rear wheels with machine and wheels in the straight ahead position. In the machine equipped with a rear tandem, the centre of the rear wheel is the line midway between the two axles of the tandem. For three-axle dumpers and scrapers, the wheel-base applies to the tractor part.	 
$L4$	Overhang to rear mounting surface	Distance on X coordinate between two X planes passing : — for crawler machines, through the sprocket or rear idler axis and the rear mounting surface of the machine; — for wheeled machines, through the rear wheel centre and the rear mounting surface.	 
$L5$	Rear axle to hinge	Distance on X coordinate between two X planes passing through the rear axle and hinge centre.