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# International Standard



# 6746/1

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## Earth-moving machinery — Definitions of dimensions and symbols — Part 1 : Base machine

*Engins de terrassement — Définitions des dimensions et des symboles — Partie 1 : Engins de base*

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Descriptors : earth handling equipment, definitions, symbols, dimensions, designation.

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

International Standard ISO 6746/1 was developed by Technical Committee ISO/TC 127, *Earth-moving machinery*, and was circulated to the member bodies in January 1980.

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It has been approved by the member bodies of the following countries :

Austria	Egypt, Arab Rep. of	Poland
Belgium	Finland	Romania
Brazil	France	South Africa, Rep. of
Bulgaria	Germany, F.R.	Sweden
Canada	Japan	United Kingdom
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No member body expressed disapproval of the document.

# Earth-moving machinery — Definitions of dimensions and symbols —

## Part 1 : Base machine

### 1 Scope

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

b) for crawler machines :

- 1) tractors — the lowest face of the shoe (see H5);
- 2) loaders — the bottom tip of the grouser.

### 2 Field of application

This part of ISO 6746 applies to the basic types of earth-moving machines as defined in ISO 6165.

**4.3 base machine** : A machine, without equipment, as described by the manufacturer's specifications.

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

### 3 References

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

ISO 6746/2, *Earth-moving machinery — Definitions of dimensions and symbols — Part 2 : Equipment*.<sup>1)</sup>

### 5 General

**5.1** In annexes B, C, D, E and F are contained the symbols and the term definitions relating to the dimensions of the base machine of earth-moving machinery.

### 4 General definitions

For the purpose of this International Standard, the following definitions shall apply.

**4.1 three dimensional reference system** : See annex A.

**4.2 ground reference plane (GRP)** : The zero "Z" plane on which the machine is placed for the measurements.

The plane is :

- a) for wheel machines, a hard level surface;

### 6 Coding system

Each dimension listed in annexes B, C, D, E and F is assigned a code which is composed of :

**6.1** One capital letter describing :

- H* = height dimensions
- W* = width dimensions
- L* = length dimensions
- R* = radial dimensions
- A* = angular dimensions

**6.2** A number is used in sequence

1) At present at the stage of draft.

## Annex A

### Three-dimensional reference system — Definitions

#### 1 Scope

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

The above system shall not be used for commercial documents.

#### 2 Field of application

This annex applies to earth-moving machines as defined in ISO 6165.

#### 3 Definitions

**3.1 zero "Y" plane** : Vertical plane which passes through the longitudinal centre-line of the machine.

**3.2 "X" plane** : Any vertical plane normal to the "Y" plane.

**3.3 "Z" plane** : Any horizontal plane normal to the "X" and "Y" planes.

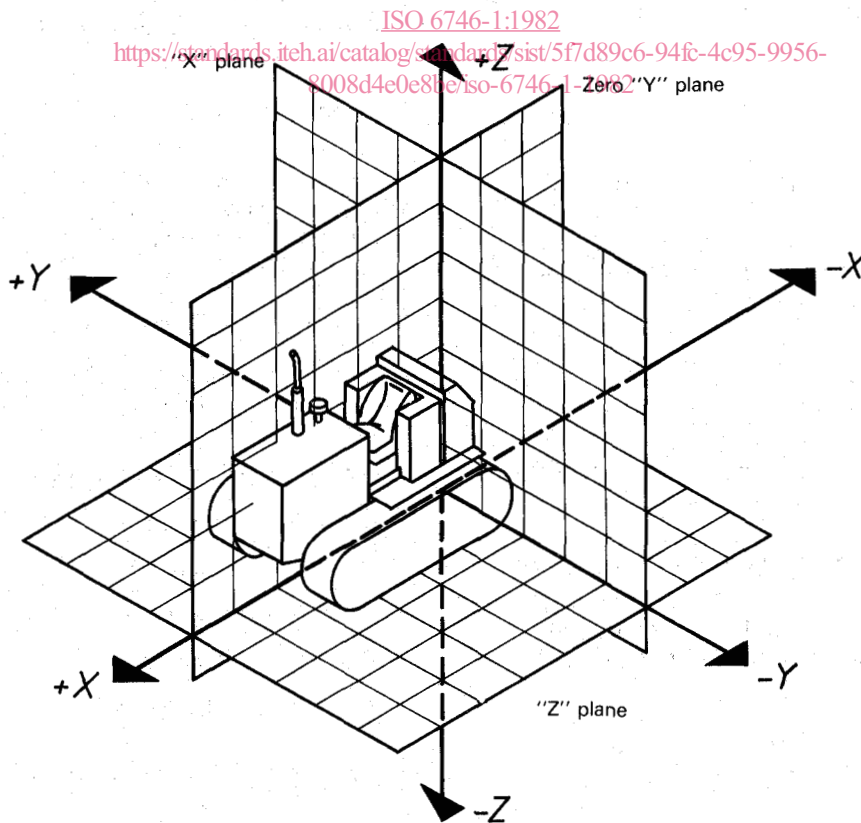
**3.4 positive coordinate** : The positive direction is forward of the zero "X" plane, right of the zero "Y" plane, and above the zero "Z" plane.

#### 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 centre-line for an engine; sprocket or rear axle centre-line for a tractor; ground line for machine measurements).

2 If only components (i.e. engine; seat) are shown, the location and positive direction of the axis from the intersection of the X, Y, Z axes (zero planes) shall assume 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).

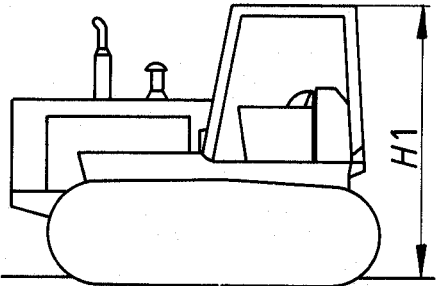
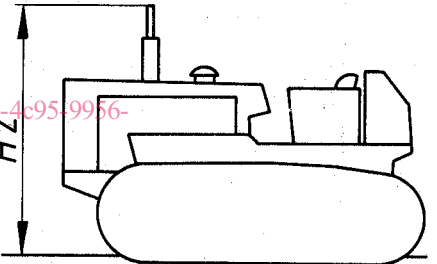
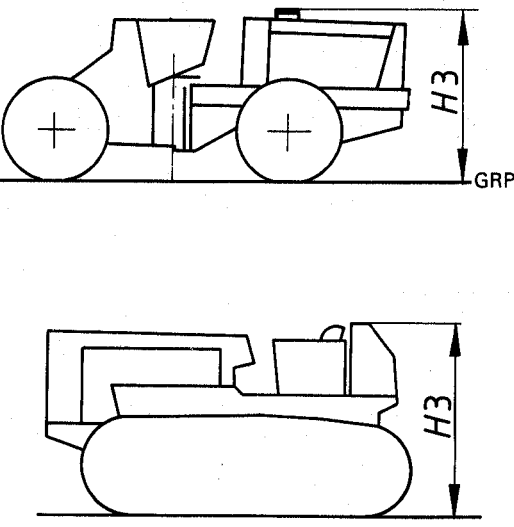
3 If a machine and/or its equipment are shown, a machine driving from right to left shall be shown.



## Annex B

### Height dimensions — Terms and symbols

NOTE — For three axle dumpers and scrapers, symbols *H1* to *H4* apply only to the tractor part.

Symbol	Term	Definition	Drawing
<i>H1</i>	Maximum total height	Distance on "Z" coordinate between the GRP and the highest point of the machine with cab or ROPS <sup>1)</sup> .	
<i>H2</i>	Maximum height	Distance on "Z" coordinate between the GRP and the highest point of the machine without cab or ROPS.	
<i>H3</i>	Shipping height	Distance on "Z" coordinate between the highest point on the machine after removal of parts normally removed for shipping and (for wheel machines) the GRP and (for crawler tractors and loaders) the bottom tip of the grouser.	

1) Roll-over protective structure.

Symbol	Term	Definition	Drawing
H4	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 (W2) or tread (wheel track) (W3) to either side of the zero "Y" plane.	
H5	Grouser height	Distance on "Z" coordinate between two "Z" planes passing through the under face of shoe and the lowest tip of grouser.	

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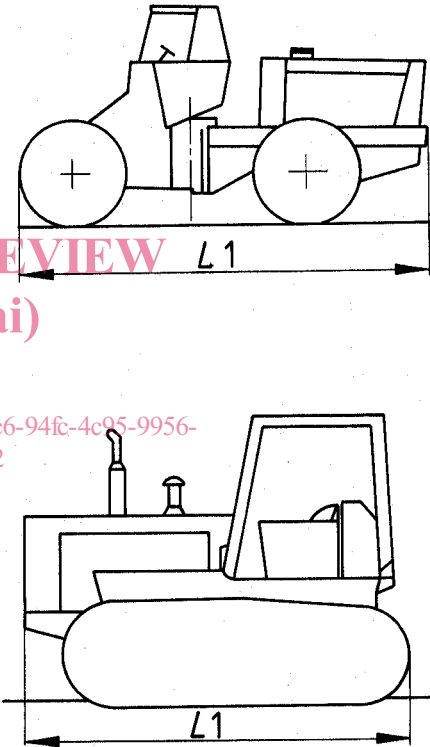
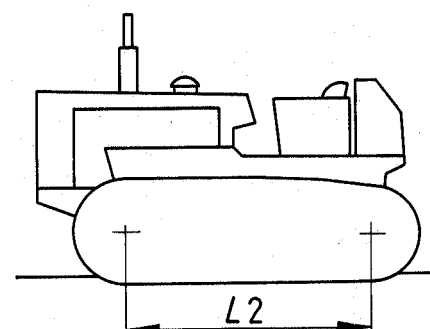
### Annex C

### Width dimensions — Terms and symbols

Symbol	Term	Definition	Drawing
W1	Maximum width	<p>Distance on "Y" coordinate between two "Y" planes passing through the farthest points of the machine on both sides of zero "Y" plane.</p> <p>For three axle dumpers and scrapers, this applies only to the tractor part.</p>	
W2	Track gauge	<p>Distance on "Y" coordinate between two "Y" planes passing through the mid-width of the sprocket teeth.</p>	
W3	Tread (wheel track)	<p>Distance on "Y" coordinate between two "Y" planes passing through the tyres centre-line.</p> <p>In the case of dual wheels it is the distance between two "Y" planes passing through the centre-line of the dual wheels. If the machine has more than one tread (wheel track) dimension, each should be specified.</p>	
W4	Track shoe width	<p>Distance on "Y" coordinate between two "Y" planes passing through the extreme lateral points of the same track shoe.</p>	

## Annex D

### Length dimensions — Terms and symbols

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

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Symbol	Term	Definition	Drawing
L3	Wheel base	<p>Distance on "X" coordinate between two "X" planes passing through the centres of the front wheels and the rear wheels with machine and wheel in the straight ahead position.</p> <p>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.</p>	
L4	Rear overhang	<p>Distance on "X" coordinate between two "X" planes passing :</p> <ul style="list-style-type: none"> <li>— for crawler machines, through sprocket axis and the rear part of the machine (excluding undercarriage or tracks);</li> <li>— for wheel machines, through the rear wheel centre and the rear part of machine.</li> </ul> <p>NOTE — The reference plane for equipment dimensions is different from the reference plane for base machine (see ISO 6746/2).</p>	
L5	Rear axle to hinge	<p>Distance on "X" coordinate between two "X" planes passing through the rear axle and hinge centre.</p>	