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Earth-moving machinery — Pipelayers — Definitions and commercial specifications

*Engins de terrassement — Tracteurs poseurs de canalisations —
Définitions et spécifications commerciales*

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Reference number
ISO 7136:1998(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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7136 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 4, *Commercial nomenclature, classification and rating*.

This second edition cancels and replaces the first edition (ISO 7136:1986), which has been technically revised.

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Earth-moving machinery — Pipelayers — Definitions and commercial specifications

1 Scope

This International Standard defines terms and specifies the content of commercial literature specifications for self-propelled pipelayers, and their equipment, as defined in clause 3.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6014:1986, *Earth-moving machinery — Determination of ground speed.*

ISO 6016:1998, *Earth-moving machinery — Method of measuring the masses of whole machines, their equipment and components.*

ISO 6165:1997, *Earth-moving machinery — Basic types — Vocabulary.*

ISO 6746-1:1987, *Earth-moving machinery — Definitions of dimensions and symbols — Part 1: Base machine.*

ISO 6746-2:1987, *Earth-moving machinery — Definitions of dimensions and symbols — Part 2: Equipment.*

ISO 9249:1997, *Earth-moving machinery — Engine test code — Net power.*

3 Definitions

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

3.1 General

3.1.1

pipelayer

self-propelled crawler or wheeled machine, having pipe-laying **equipment** (3.1.4) with main frame, load hoist mechanism, vertically pivotable **side boom** (3.1.2), and **counterweight** (3.1.6), primarily designed to handle and lay pipes [ISO 6165:1997]

3.1.2

side boom

(tractor or loader mounted) **equipment** (3.1.4) including **boom** (3.1.5), load-hoist mechanisms and a vertically pivotable side boom, added to a tractor or a loader (wheel or crawler type machine), which is designed to handle and lay pipes and carry pipe-laying equipment; it may or may not include **counterweights** (3.1.6)

3.1.3

base machine

pipelayer (3.1.1) including the undercarriage, without **equipment** (3.1.4) or **attachments** (3.1.7), as described by the manufacturer's specifications

See figure 1.

3.1.4

equipment

set of **components** (3.1.8) [**boom** (3.1.5) and **counterweights** (3.1.6)] mounted onto the **base machine** (3.1.3) to fulfil the primary design function of a **pipelayer** (3.1.1)

3.1.5

boom

structural member that supports the load

3.1.6

counterweight

any additional removable weight and its removable support added to increase tipping load

NOTE — There are two types of counterweights. See 3.1.6.1 and 3.1.6.2

3.1.6.1

adjustable

that portion of the **counterweight** (3.1.6) that is movable

3.1.6.2

nonadjustable

counterweight (3.1.6) fixed in one location on the machine

3.1.7

attachment

assembly of **components** (3.1.8) that can be mounted on the **base machine** (3.1.3), or **equipment** (3.1.4), for a specific use [ISO 6016:1998]

3.1.8

component

part, or an assembly of parts, of a **base machine** (3.1.3), **equipment** (3.1.4) or **attachment** (3.1.7)

3.2 Masses

3.2.1

operating mass

mass of the **base machine** (3.1.3) with **equipment** (3.1.4) and empty **attachment** (3.1.7) as specified by the manufacturer, operator (75 kg), full fuel tank and all fluid systems at the levels specified by the manufacturer [ISO 6016:1998]

3.2.2

shipping mass

mass of the **base machine** (3.1.3) without operator, fuel level at 10 % of tank capacity, all fluid systems at their levels specified by the manufacturer and with or without **equipment** (3.1.4), **attachment** (3.1.7), cab, canopy, ROPS¹⁾ and/or FOPS²⁾, wheels and **counterweights** (3.1.6) as stated by the manufacturer [ISO 6016:1998]

¹⁾ ROPS: Roll-over protective structure

²⁾ FOPS: Falling object protective structure

NOTE — If the machine has to be disassembled for shipping purposes, the masses of these dismantled components should be stated by the manufacturer.

3.3 Dimensions

For definitions and symbols of dimensions strictly related to pipelayers, the following apply. See also ISO 6746-1 and ISO 6746-2 for definitions and symbols.

3.3.1

overall width without counterweight

W_1

overall width of the machine with the **boom** (3.1.5), **counterweight** (3.1.6), and counterweight support removed

See figure 1.

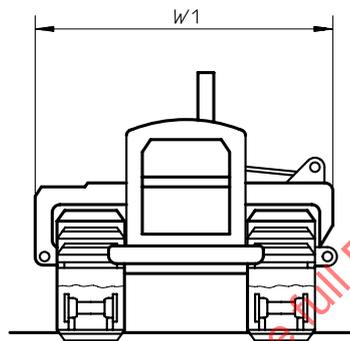


Figure 1 — Dimension W_1

3.3.2

width with counterweight retracted

W_2

overall width of the machine with the **boom** (3.1.5) removed and the adjustable **counterweight** (3.1.6) retracted

See figure 2.



Figure 2 — Dimension W_2

3.3.3
width with counterweight extended

WW3

overall width of the machine with the **boom** (3.1.5) removed and the adjustable **counterweight** (3.1.6) extended

See figure 3.

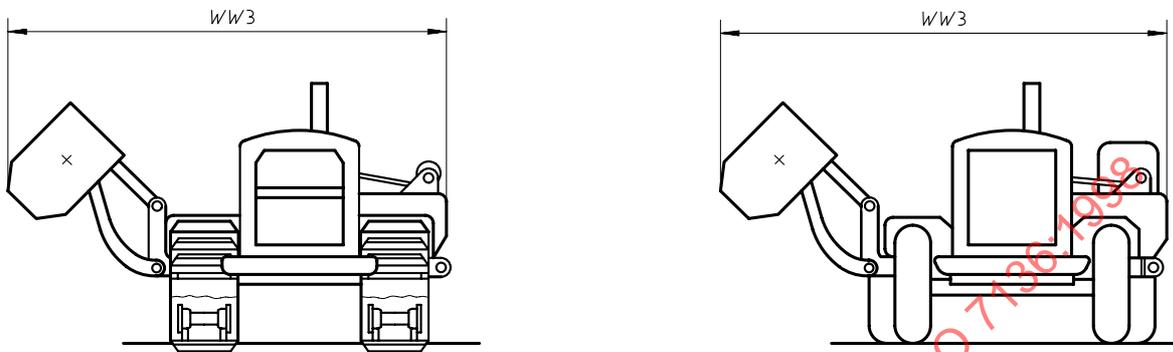


Figure 3 — Dimension *WW3*

3.3.4
load overhang distance

WW4

(crawler machine) perpendicular distance from a vertical plane passing through the outer edge of the outer track link rail, **boom** (3.1.5) side, to a parallel vertical plane passing through the lift point (load-bearing surface midpoint of the hook)

See figure 4.

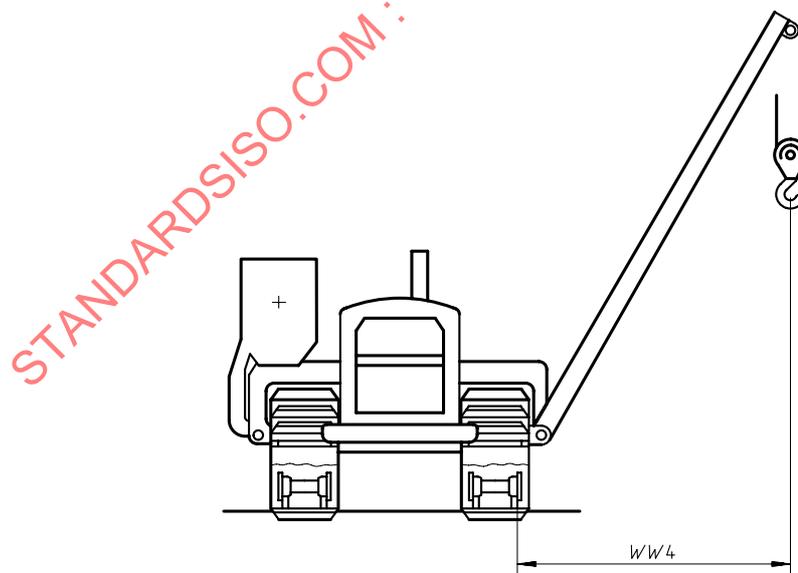


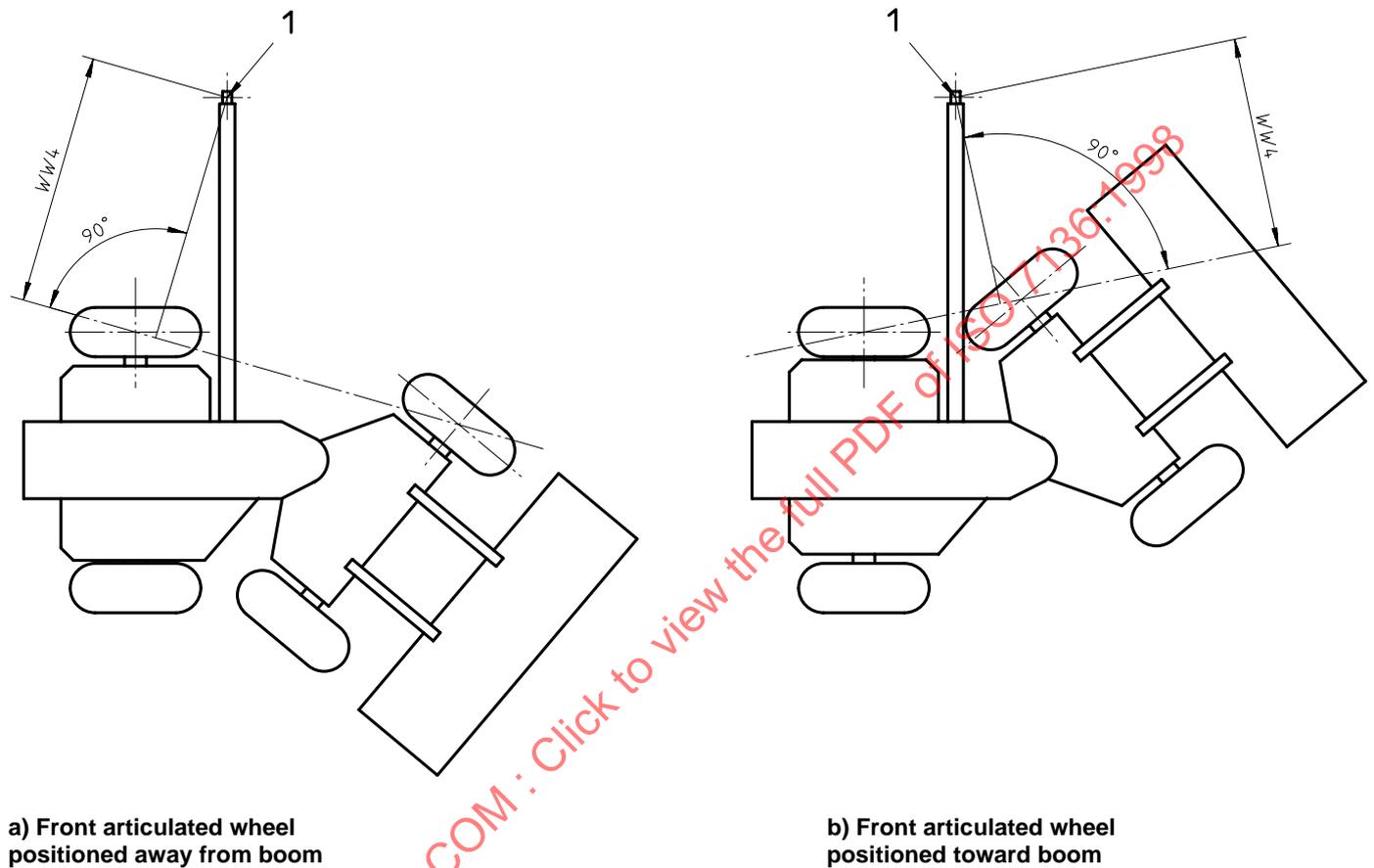
Figure 4 — Dimension *WW4* for a crawler machine

3.3.5 load overhang distance

WW_4

(wheel machine) perpendicular distance from a vertical plane passing through the centrepoints of the front and rear tyres [boom (3.1.5) side of the machine] to a parallel vertical plane passing through the lift point (load-bearing surface midpoint of the hook)

See figure 5.



Key

1 Lift point

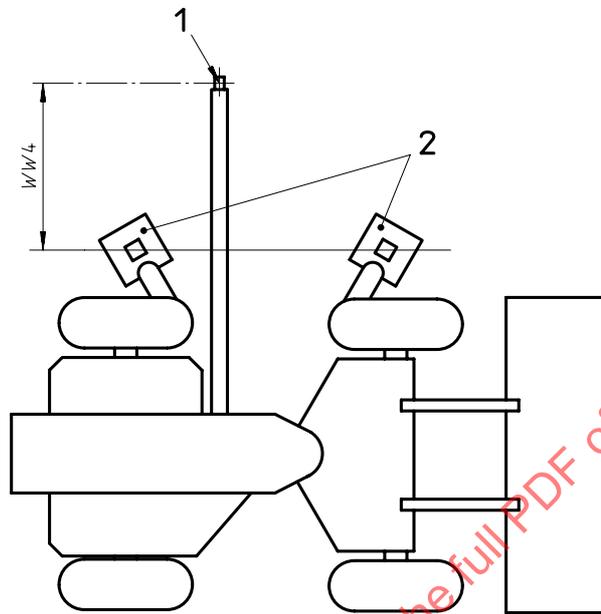
Figure 5 — Dimension WW_4 for a wheel machine

3.3.6
load overhang distance

WW4

(wheel machine with outriggers) perpendicular distance from a vertical plane passing through the centrepoinTs of the outrigger pads, in their most favourable position (wheels in straight ahead position), to a parallel vertical plane passing through the lift point (load-bearing surface midpoint of the hook)

See figure 6.



Key

- 1 Lift point
- 2 Outriggers

Figure 6 — Dimension *WW4* for a wheel machine with outriggers (straight ahead position)

3.3.7
length of boom

LL1

perpendicular distance between the horizontal centreline of the boom (3.1.5) foot pivot and the horizontal centreline of the upper load block pivot

See figure 7.

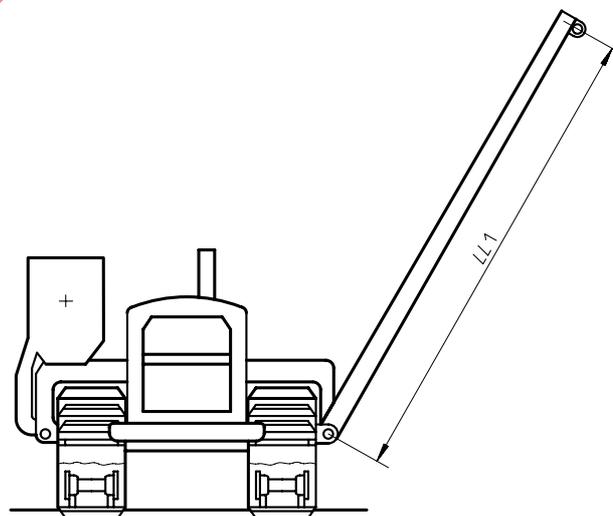


Figure 7 — Dimension *LL1*

3.3.8 shipping height

H_3

(crawler machine) vertical distance from the tip of the grouser to the highest point of the machine without **boom**, **counterweight** (3.1.6), exhaust pipe, air cleaner inlet pipe or other easily removable **components** (3.1.8)

See figure 8.

NOTE — Adapted from ISO 6746-1:1987.

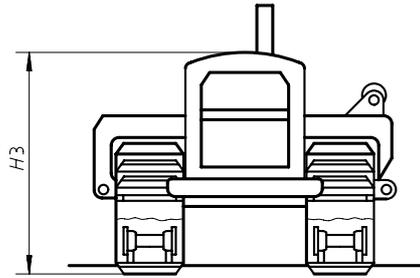


Figure 8 — Dimension H_3 for a crawler machine

3.3.9 shipping height

H_3

(wheel machine) vertical distance from the ground reference plane (GRP) to the highest point of the machine without **boom** (3.1.5), **counterweight** (3.1.6), exhaust pipe, air cleaner inlet pipe, or other easily removable **components** (3.1.8)

See figure 9.

NOTE — Adapted from ISO 6746-1:1987.

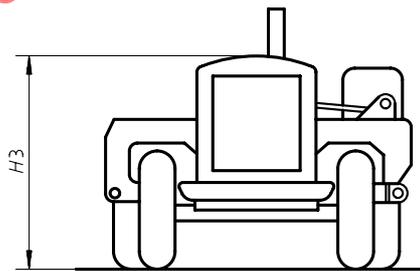


Figure 9 — Dimension H_3 for a wheel machine

3.3.10 grouser height

H5

vertical distance from the face of the track shoe to the tip of the grouser

See figure 10.

NOTE — Adapted from ISO 6746-1:1987.

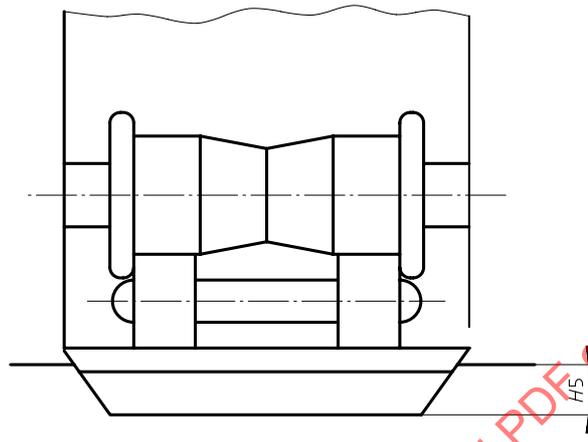


Figure 10 — Dimension *H5*

3.3.11 height to top of retracted counterweight

HH3

vertical distance from the ground reference plane (GRP) to the highest point of the **counterweights** (3.1.6), or frame, when the adjustable counterweights are in the retracted position

See figure 11.

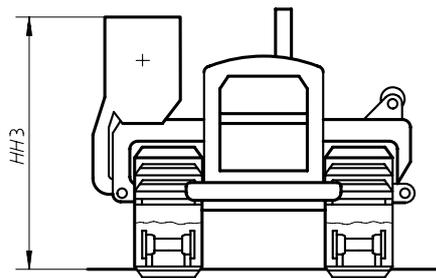


Figure 11 — Dimension *HH3*

3.3.12 clearance under the extended counterweights

HH4

vertical distance from the ground reference plane (GRP) to the lowest point of the **counterweights** (3.1.6), when the adjustable counterweights are in the extended position

See figure 12.

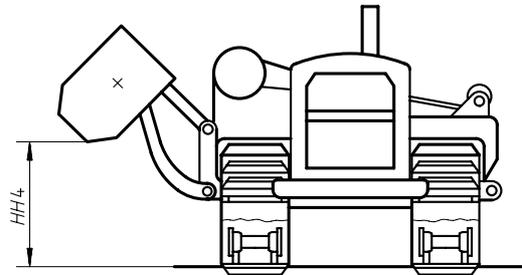


Figure 12 — Dimension *HH4*

3.3.13 maximum hook height

HH5

vertical distance from the ground reference plane (GRP) to the load-bearing surface midpoint of the hook when the hook is at maximum height position

See figure 13.

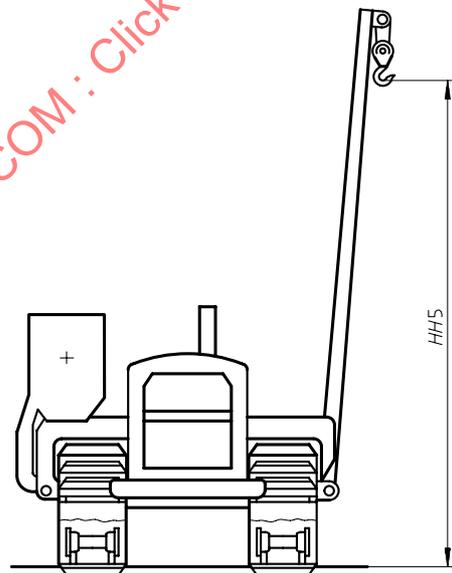
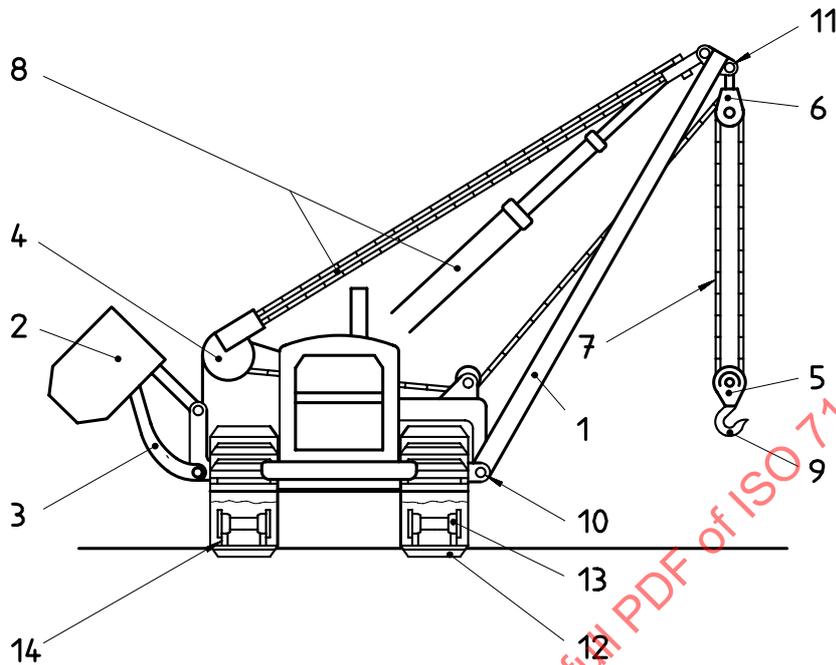


Figure 13 — Dimension *HH5*

4 Nomenclature

See figure 14 for pipelayer component nomenclature.



Key

- | | |
|---|------------------------------------|
| 1 Boom | 8 Boom hoist rope or boom cylinder |
| 2 Counterweight | 9 Load hook |
| 3 Counterweight support(s) | 10 Boom foot pivot |
| 4 Load hoist and, if applicable, boom hoist drums | 11 Upper load block pivot |
| 5 Load block, lower | 12 Track shoe |
| 6 Load block, upper | 13 Lower track roller |
| 7 Load hoist, rope | 14 Track link rail outer edge |

Figure 14 — Pipelayer component nomenclature

5 Commercial literature specifications

The following information shall be specified in commercial literature.

SI units shall be used.

5.1 Engine

Specify the following information:

- manufacturer and model;
- ignition type, i.e. diesel or spark ignition;
- type of cycle, i.e. two or four stroke;
- form of air aspiration i.e. naturally aspirated, mechanically supercharged or turbocharged;
- number of cylinders;