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Earth-moving machinery — Pipelayers — Terminology and commercial specifications

Engins de terrassement — Tracteurs poseurs de canalisations — Terminologie et spécifications commerciales

Reference number
ISO 7136:2006(E)

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Foreword

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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

This third edition cancels and replaces the second edition (ISO 7136:1998), which has been technically revised.

Earth-moving machinery — Pipelayers — Terminology and commercial specifications

1 Scope

This International Standard establishes terminology and the content of commercial literature specifications for self-propelled pipelayers and their equipment. It is applicable to pipelayers as defined in ISO 6165.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

ISO 6165:2006, *Earth-moving machinery — Basic types — Identification and terms and definitions*

ISO 6746 (all parts), *Earth-moving machinery — Definitions of dimensions and codes*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6165 and the following apply.

3.1 General

3.1.1
pipelayer
〈pipelayers with rigid upper structure〉 self-propelled crawler or wheeled machine, having pipe-laying equipment with main frame, load-hoist mechanism, vertically pivotable side boom and counterweight, primarily designed to handle and lay pipes

[ISO 6165:2006, definition 4.11]

3.1.2
rotating pipelayer
self-propelled crawler or wheeled machine, having pipe-laying equipment with main frame, load hoist mechanism with either a load hoist drum or a winch, vertically pivotable boom, fitted on a rotating upper structure, and counterweight, primarily designed to handle and lay pipes

[ISO 6165:2006, definition 4.12]

3.1.3
side boom
equipment 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

NOTE The equipment includes boom and load hoist mechanisms and a vertically pivotable side boom. It can be with or without counterweights.

3.1.4
rotating upper structure
upper portion of the machine, capable of at least 90° rotation around a vertical axis passing through the longitudinal axis of the machine

NOTE It includes machine cab, boom and counterweight(s).

3.1.5
base machine
machine with a cab or canopy and operator-protective structures if required, without equipment and attachments but possessing the necessary mountings for such equipment and attachments

See Figure 1.

3.1.6
equipment
set of components (boom and counterweights) mounted onto the base machine to fulfil the primary design function of a pipelayer

NOTE Equipment for pipelayers includes load hoist mechanisms with either a load hoist drum or a winch and a vertically pivotable side boom.

3.1.7
boom
fixed length structural member that supports the load

3.1.8
counterweight
any additional removable weight and its removable (or fixed) support added to increase tipping load

NOTE There are two types of counterweights, defined in 3.1.8.1 and 3.1.8.2.

3.1.8.1
adjustable counterweight
that portion of the counterweight that is movable

3.1.8.2
nonadjustable counterweight
counterweight fixed in one location on the machine

3.1.9
attachment
assembly of components that can be mounted on the base machine, or equipment, for a specific use

3.1.10
component
part or an assembly of parts of a base machine, equipment or attachment

3.2 Masses

3.2.1
operating mass
mass of the base machine with equipment and empty attachment as specified by the manufacturer, and with the operator (75 kg), full fuel tank and all fluid systems at the levels specified by the manufacturer

[ISO 6016:1998, definition 3.2.1]

3.2.2
shipping mass
mass of the base machine without an operator, and with fuel level at 10 % of tank capacity, all fluid systems at their levels specified by the manufacturer and with or without equipment, attachment, cab, canopy, ROPS and/or FOPS, wheels and counterweights as stated by the manufacturer

[ISO 6016:1998, definition 3.2.5]

3.3 Dimensions

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

3.3.1
overall width without counterweight
$W1$
overall width of the machine with the boom, counterweight, and counterweight support removed (if removable)

See Figure 1.

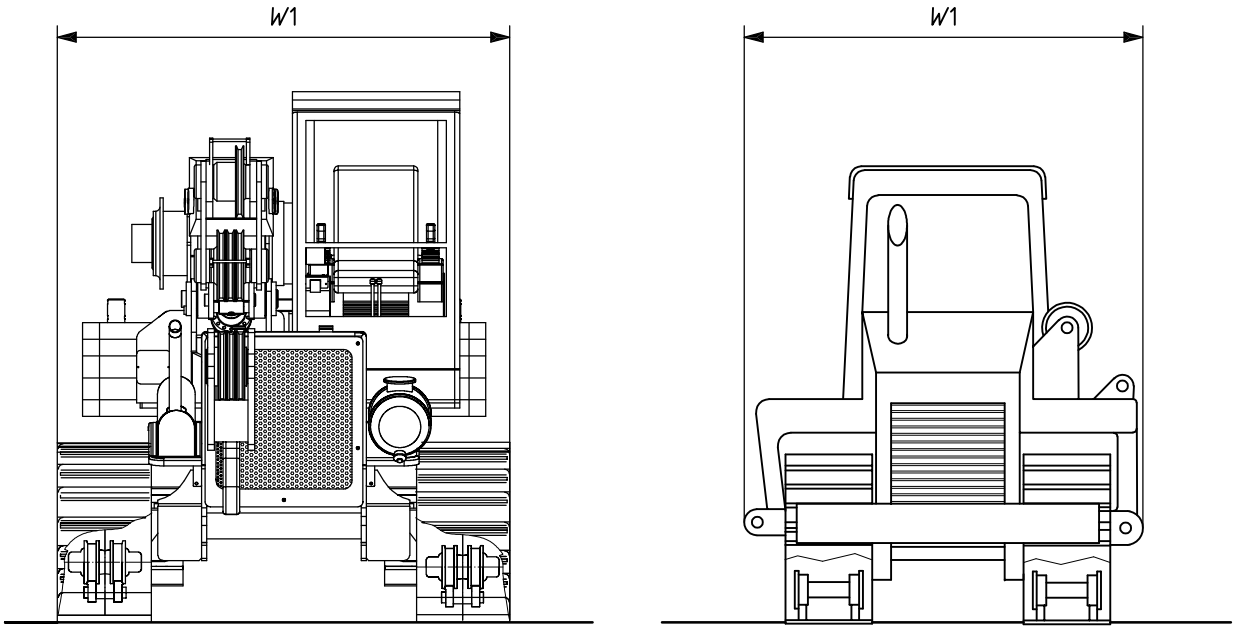
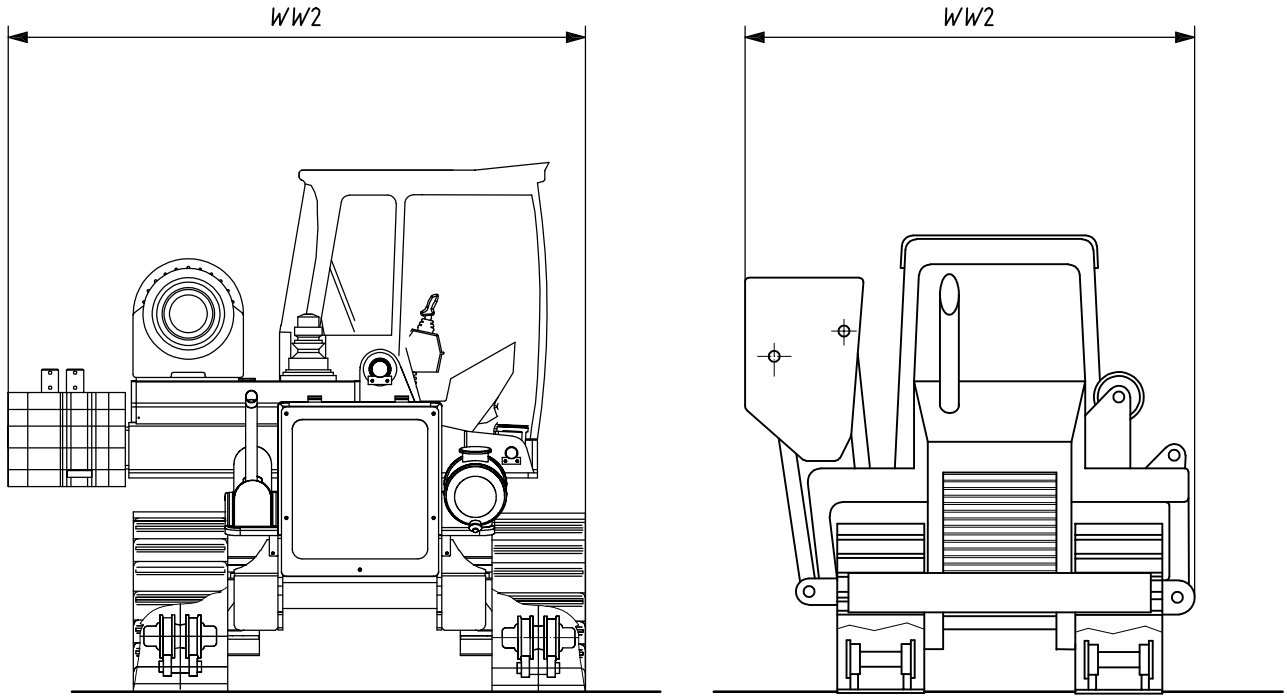


Figure 1 — Dimension $W1$

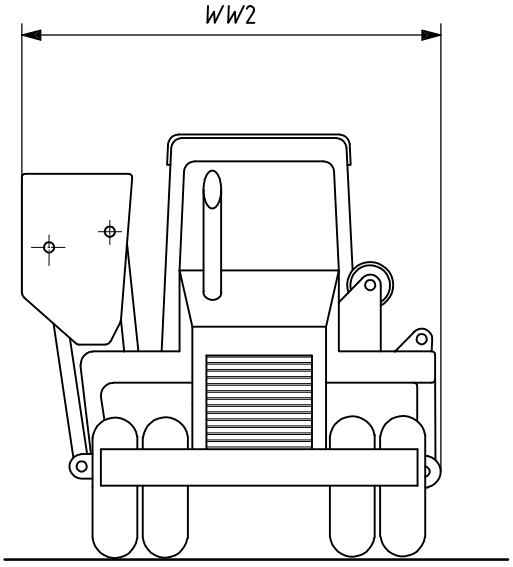
3.3.2
width with counterweight retracted
$WW2$
overall width of the machine with the boom removed and the adjustable counterweight retracted

NOTE The rotating upper structure is at 90°.

See Figure 2 a) and b).



a) Dimension $WW2$ for crawler machine



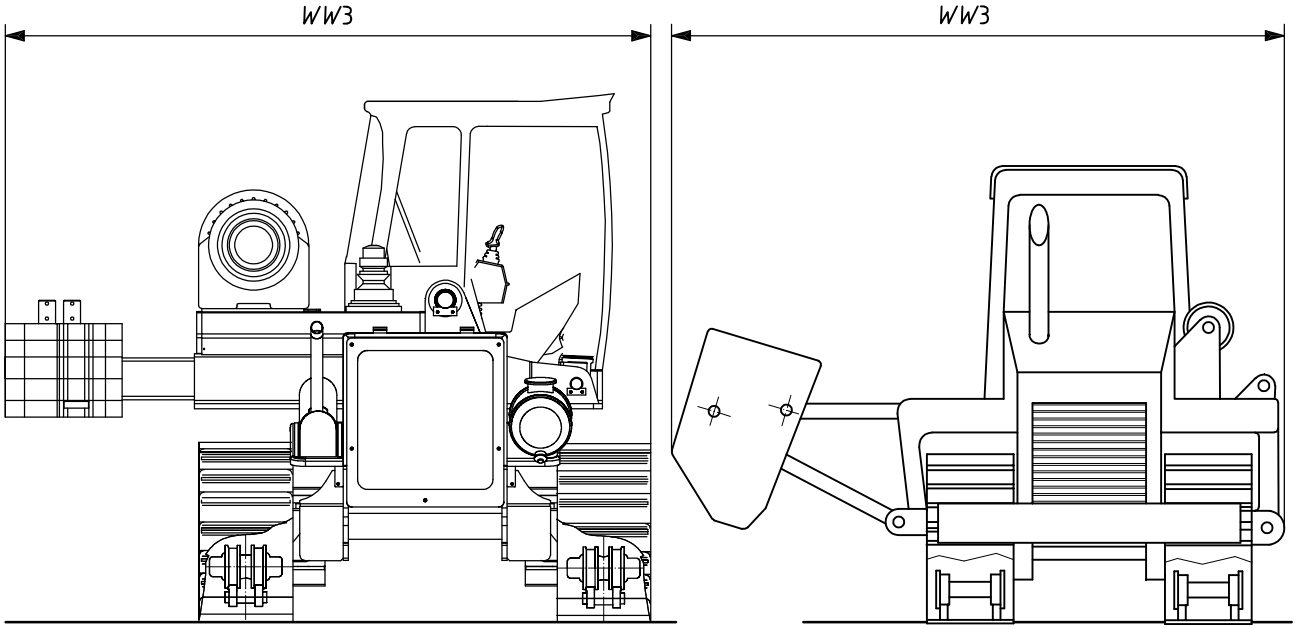
b) Dimension $WW2$ for wheeled machine

Figure 2 — Dimension $WW2$ for wheeled and crawler machines

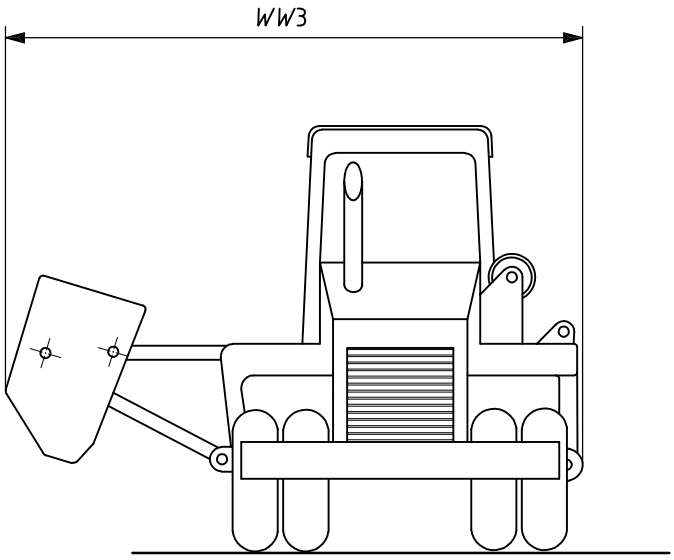
3.3.3
width with counterweight extended
$WW3$
overall width of the machine with the boom removed and the adjustable counterweight extended

NOTE The rotating upper structure is at 90°.

See Figure 3 a) and b).



a) Dimension $WW3$ for crawler machine



b) Dimension $WW3$ for wheeled machine

Figure 3 — Dimension $WW3$ for wheeled and crawler machines

3.3.4
load overhang distance
$WW4$
⟨crawler machine⟩ horizontal and perpendicular distance from the lift point line to the outer edge of the outer track link rail on the boom side of the machine

NOTE The rotating upper structure is positioned with the boom centreline perpendicular to the machine longitudinal axis.

See Figure 4.

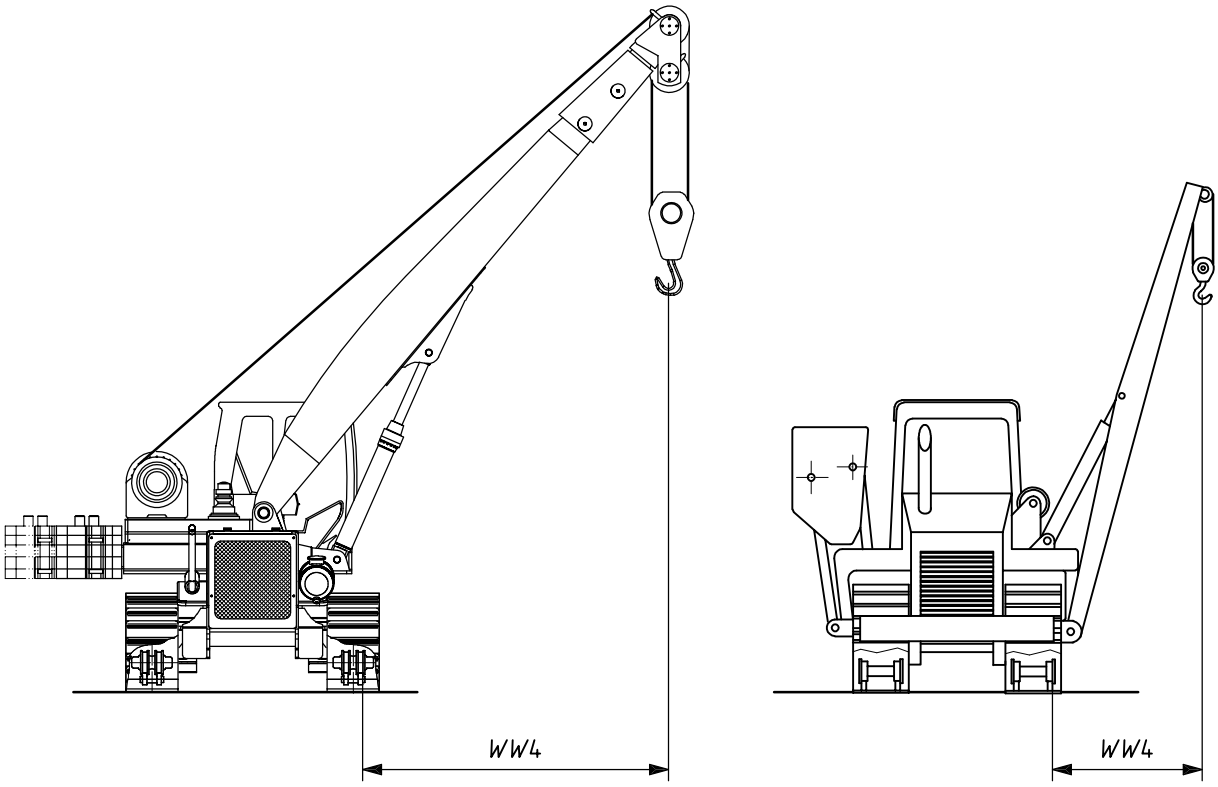
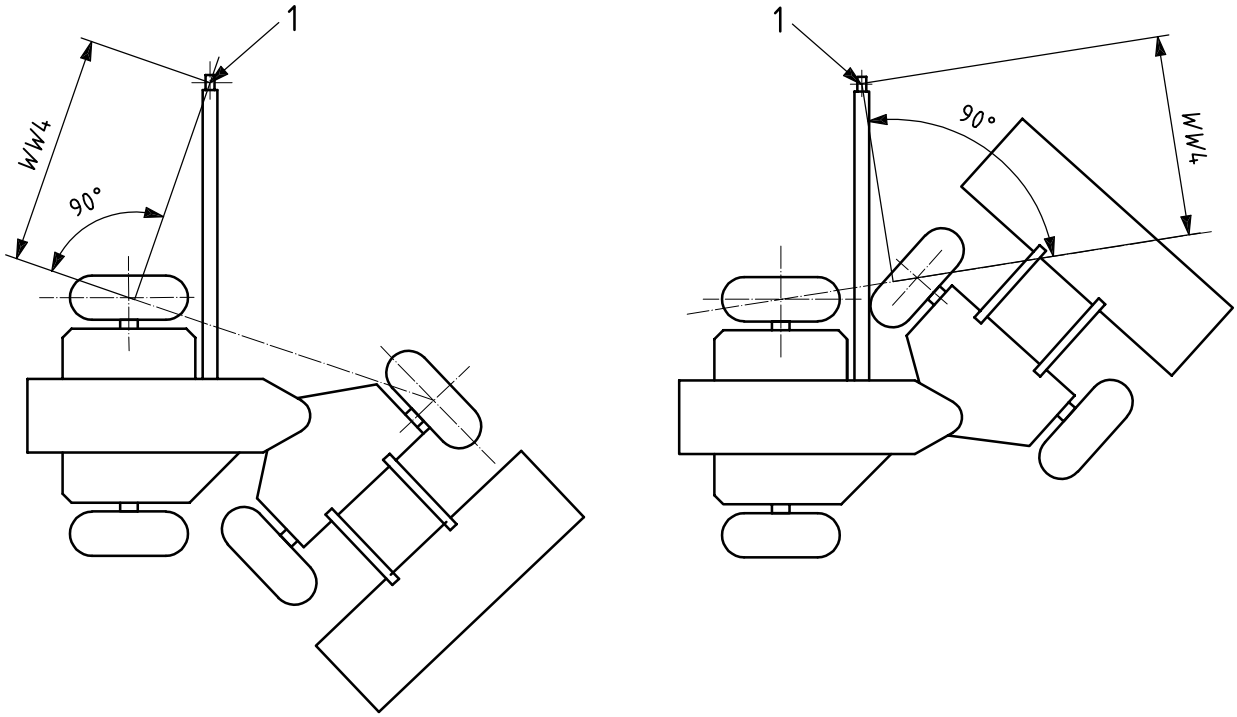


Figure 4 — Dimension $WW4$ for crawler machine

3.3.5
load overhang distance
$WW4$
⟨wheeled machine⟩ horizontal and perpendicular distance from the lift point line to a line connecting the centreline of the front and rear tires on the boom side of the machine

NOTE The rotating upper structure is positioned with the boom centreline perpendicular to the machine longitudinal axis.

See Figure 5.



a) Articulated wheeled tractor steered away from boom

b) Articulated wheeled tractor steered toward boom

Key

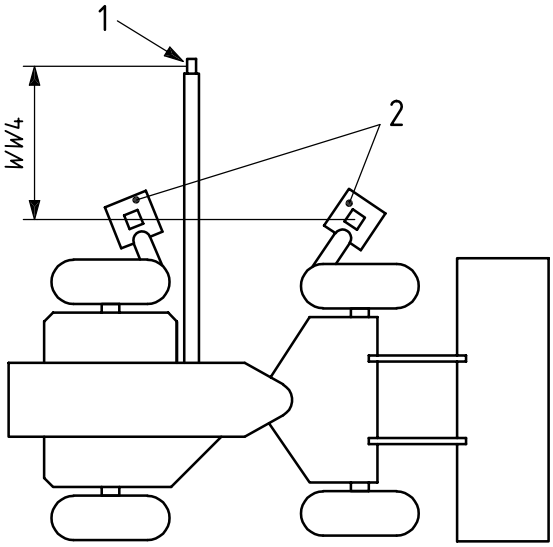
1 lift point

Figure 5 — Dimension $WW4$ for wheeled machine

3.3.6
load overhang distance
$WW4$

⟨machine with outriggers⟩ horizontal and perpendicular distance from the lift point to a line connecting the centreline of the outrigger pads in their most favourable position

See Figure 6.



Key

1 lift point
2 outriggers

Figure 6 — Dimension *WW*4 for machine with outriggers steered straight

3.3.7
length of boom
*LL*1
straight-line distance between the centreline of the boom foot pivot and the centreline of the upper load block pivot

See Figure 7.

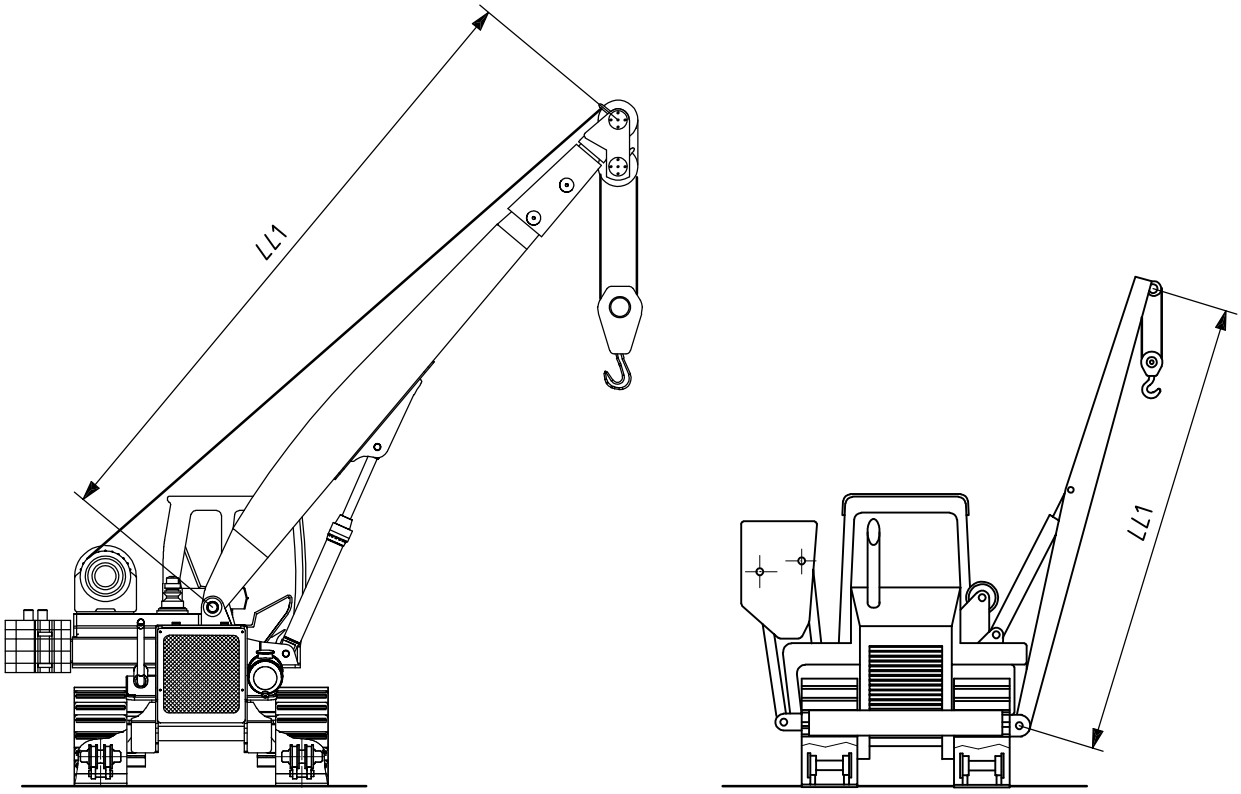


Figure 7 — Dimension $LL1$

3.3.8
shipping height
$H3$
⟨crawler machine⟩ height from the tip of the grouser to the highest point on the machine without the boom, counterweight, exhaust pipe, air cleaner inlet pipe or other easily removable components (if applicable)

See Figure 8.

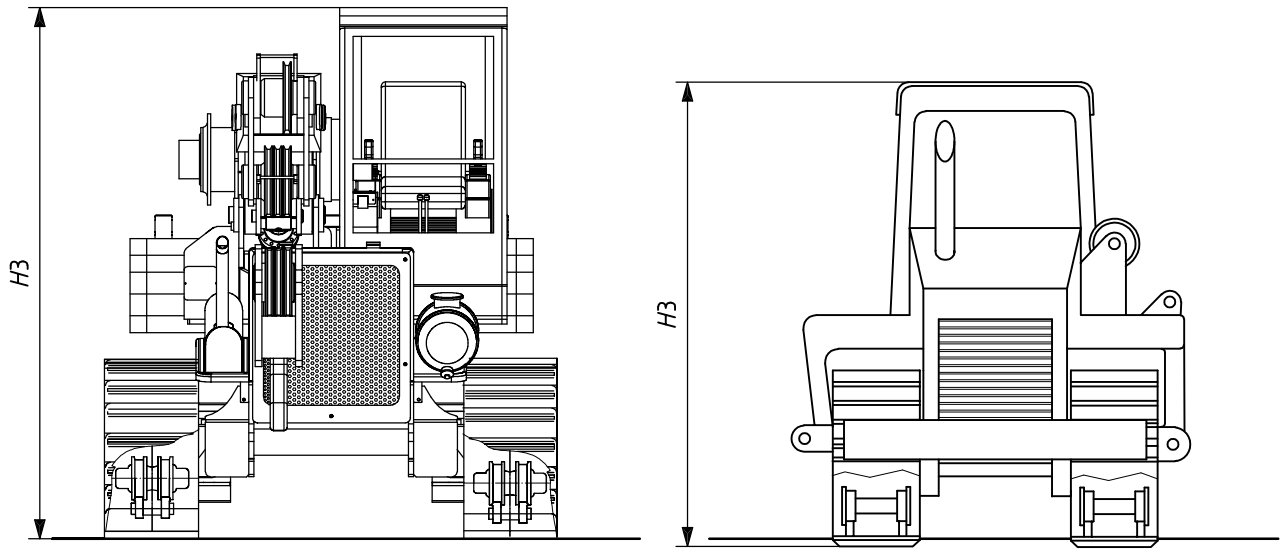


Figure 8 — Dimension $H3$ for crawler machine

3.3.9
shipping height
*H*3
⟨wheeled machine⟩ height from the ground reference plane (GRP) to the highest point on the machine without the boom counterweight, exhaust pipe, air cleaner inlet pipe, or other easily removable components

See Figure 9.

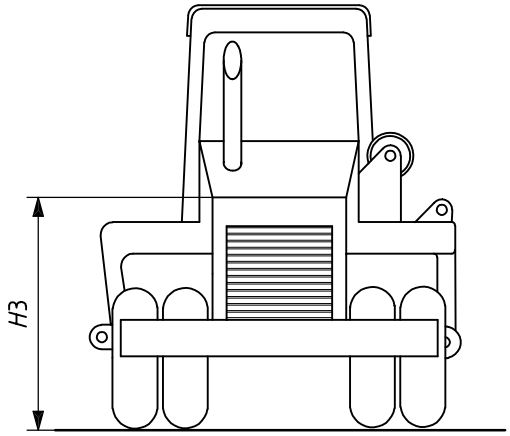


Figure 9 — Dimension *H*3 for wheeled machine

3.3.10
grouser height
*H*5
distance between the face of the track shoe and the tip of the grouser

See Figure 10.

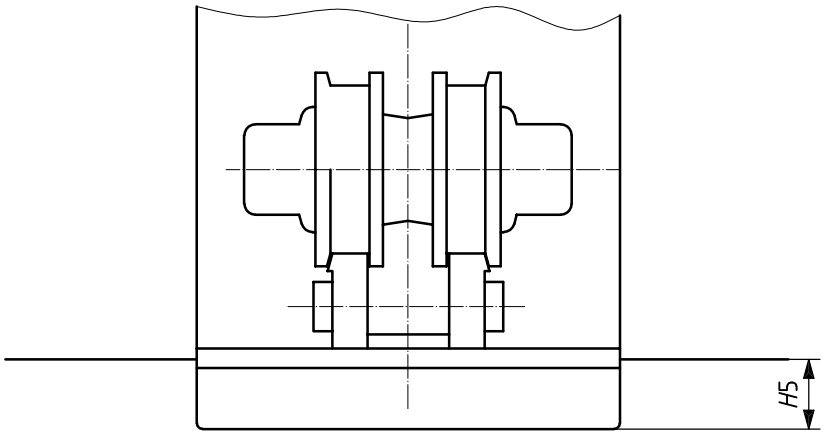


Figure 10 — Dimension *H*5

3.3.11
height to top of retracted counterweight
*HH*3
height between the ground reference plane (GRP) and the highest point on the counterweights when the adjustable counterweights are in the retracted position

See Figure 11.

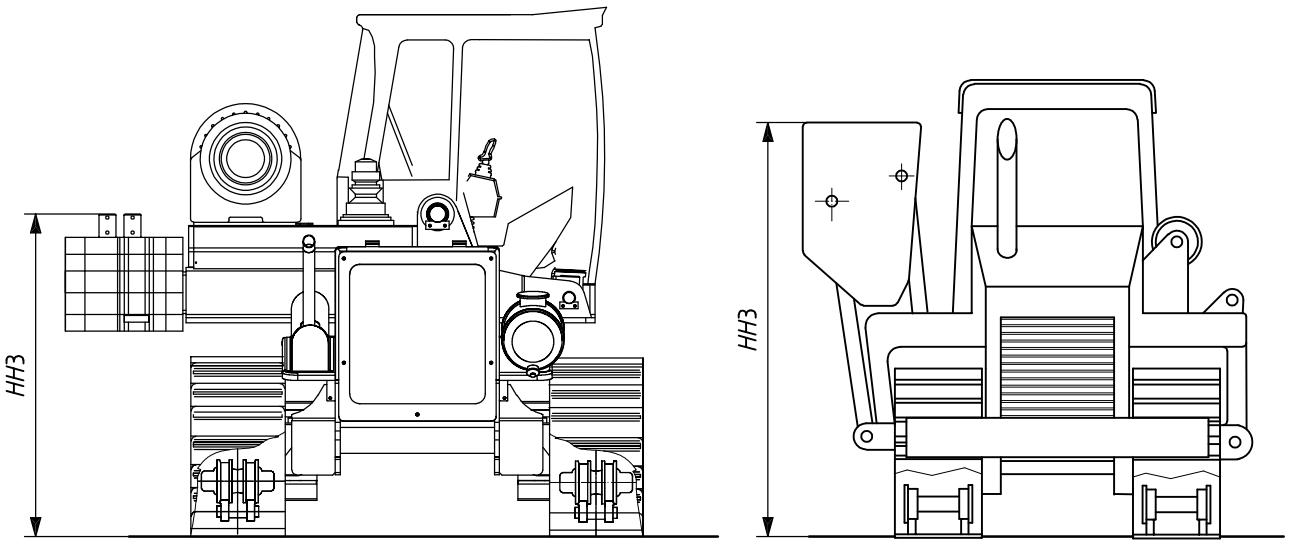


Figure 11 — Dimension *HH*3

3.3.12
clearance under the extended counterweights
*HH*4
height between the ground reference plane (GRP) and the lowest point on the counterweights when the adjustable counterweights are in the extended position

See Figure 12.

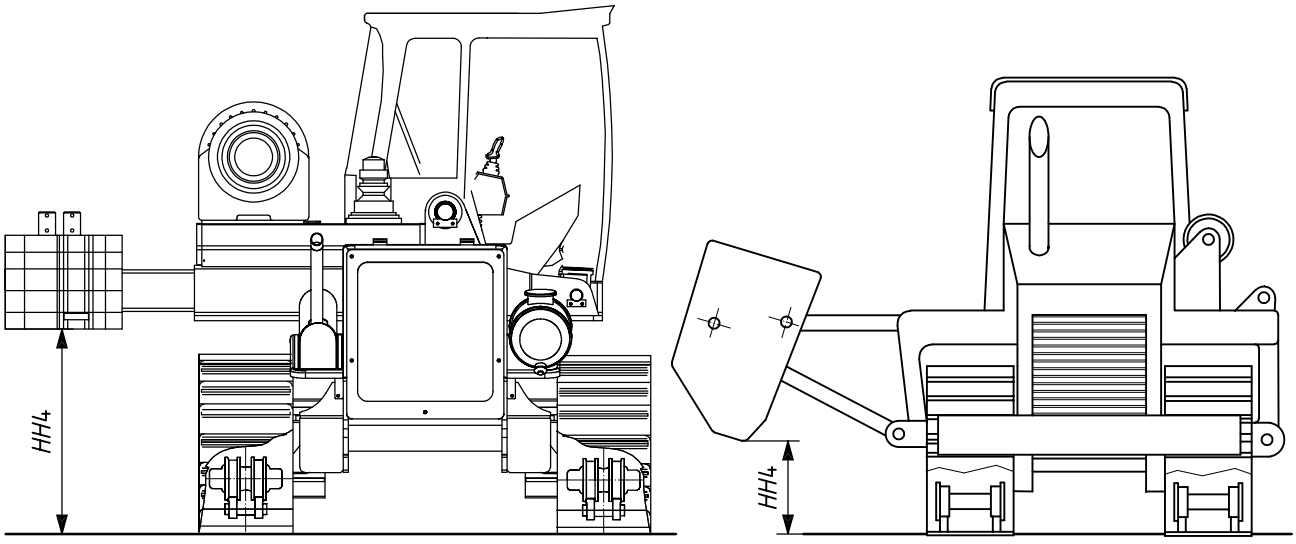


Figure 12 — Dimension *HH*4

3.3.13
maximum hook height
*HH*5
height between the ground reference plane (GRP) and the bottom of the hook opening at maximum hook height

See Figure 13.

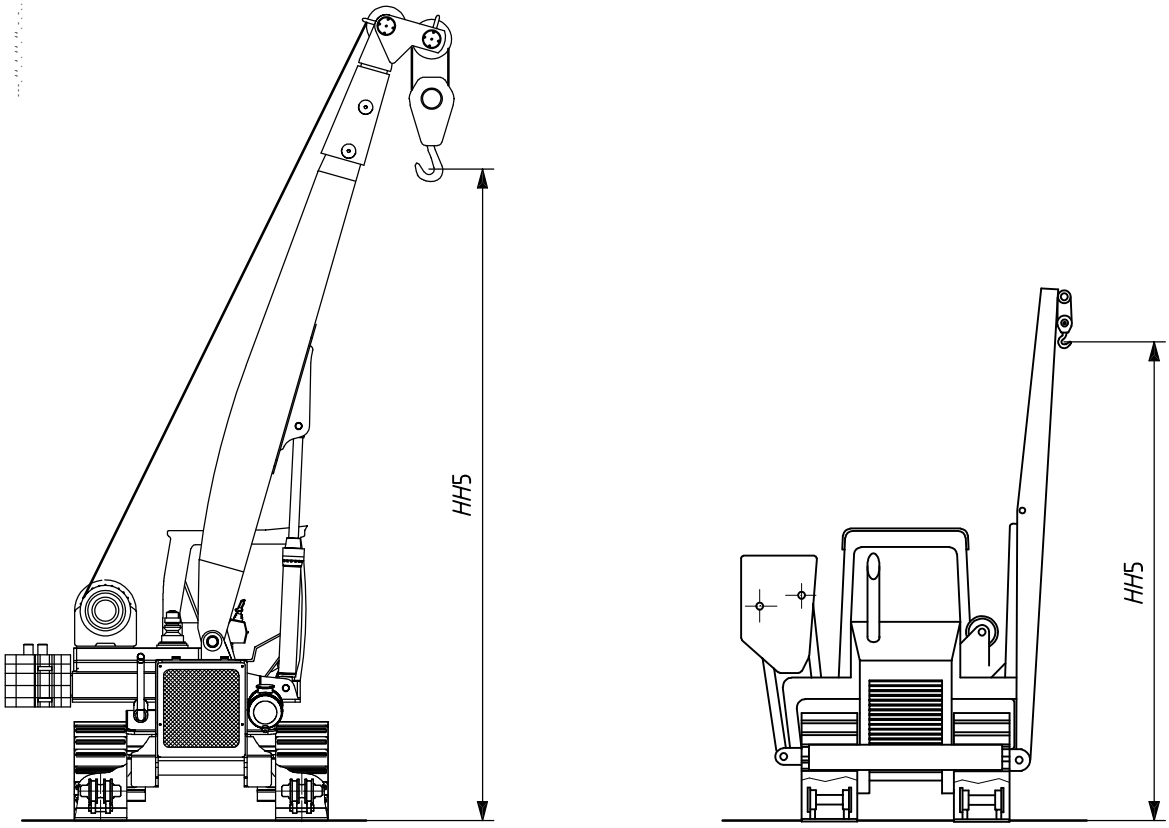
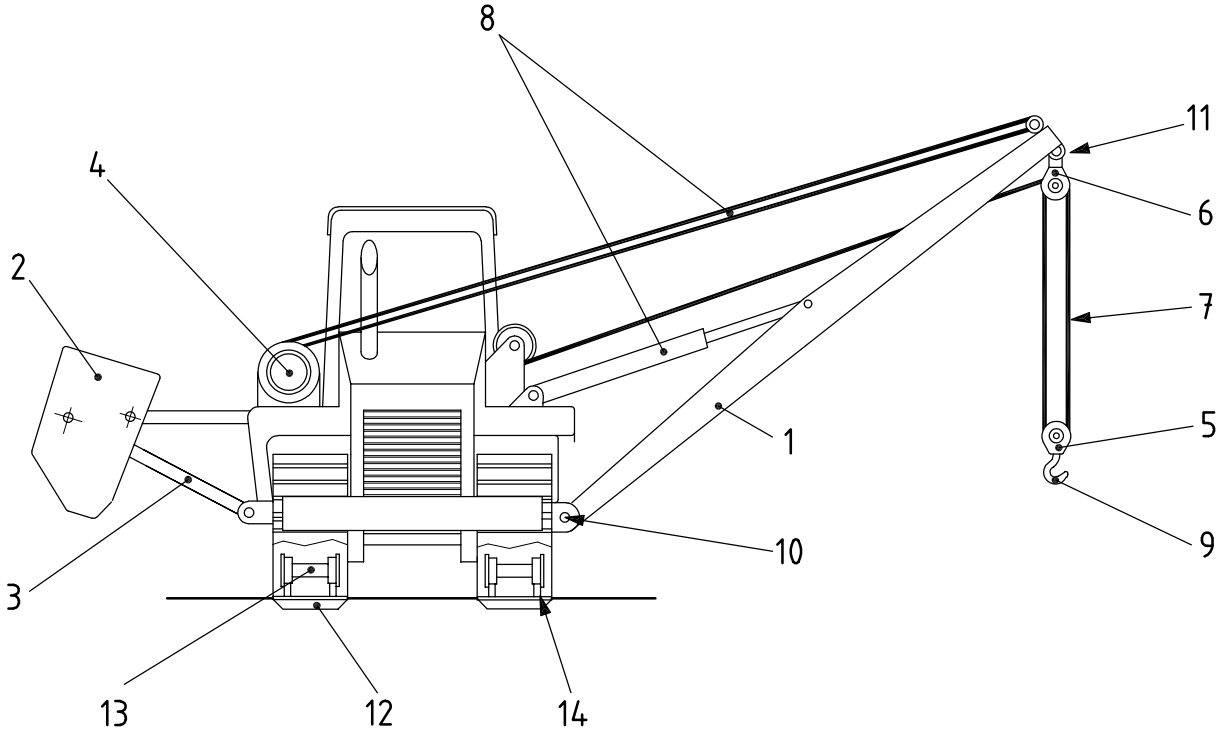


Figure 13 — Dimension *HH*5

4 Nomenclature

See Figure 14 for pipelayer component nomenclature.

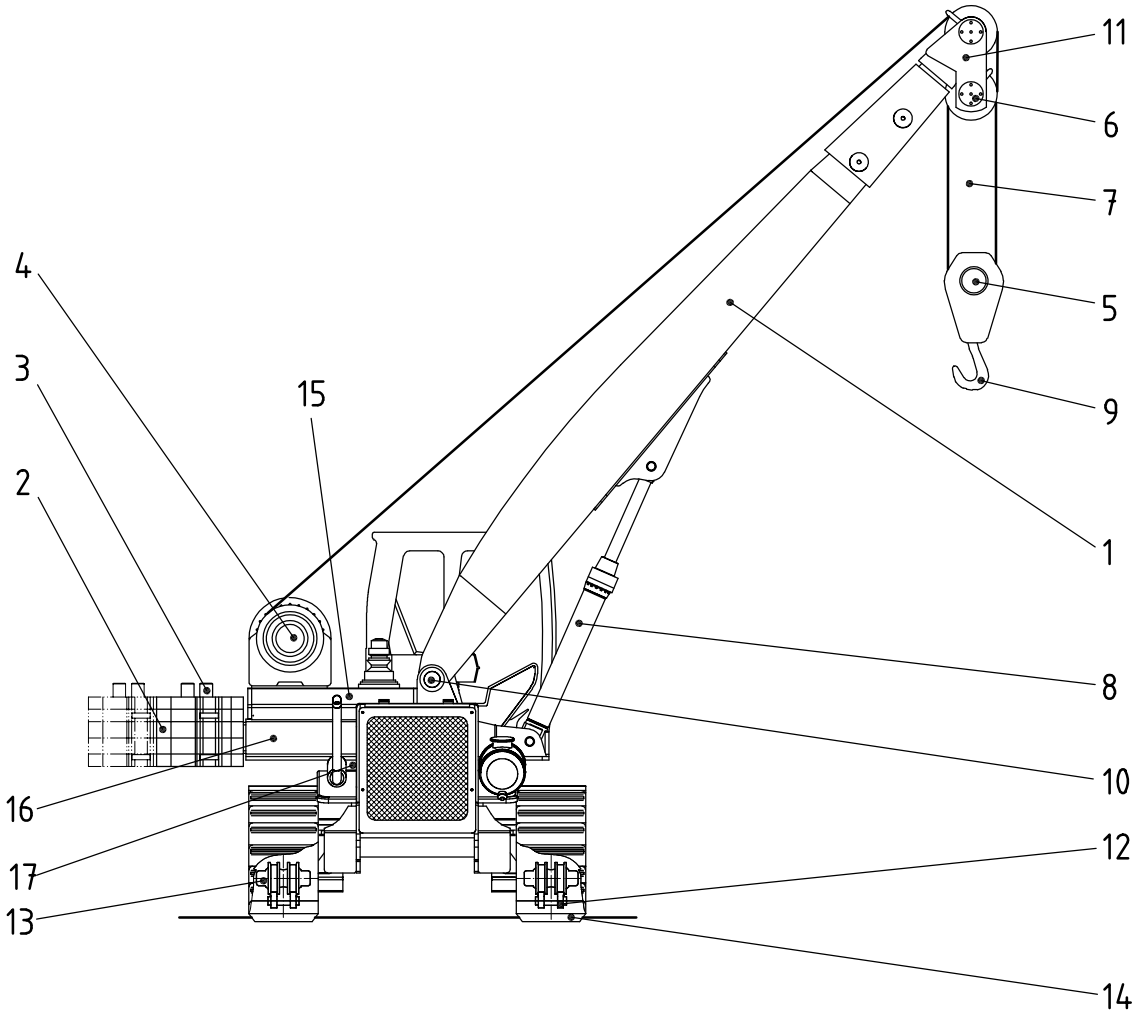


Key

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

a) Pipelayer

Figure 14 — Pipelayer component nomenclature



Key

1 boom
2 counterweight
3 counterweight support(s)
4 load hoist and, if applicable, boom hoist drums
5 load block, lower
6 load block, upper
7 load hoist, rope
8 boom hoist rope or boom cylinder
9 load hook
10 boom foot pivot
11 upper load block pivot
12 track shoe
13 lower track roller
14 track link rail outer edge
15 rotating upper structure
16 revolving frame
17 swing bearing

b) Rotating pipelayer

Figure 14 (*continued*)

5 Commercial literature specifications (SI units)

5.1 Engine

Specify the following characteristics:

a) manufacturer and model;

b) ignition type, i.e. diesel or spark ignition;

c) type of cycle, i.e. two- or four-stroke;

d) form of air aspiration, i.e. naturally aspirated, mechanically supercharged or turbocharged;

e) number of cylinders;

f) bore;

g) stroke;

h) displacement;

i) cooling system, i.e. air- or water-cooled;

j) type of fuel;

k) net power in accordance with ISO 9249;

l) maximum torque at a given engine speed;

m) starter type;

n) electrical system voltage.

5.2 Transmission

Specify the type, for example:

— manual shift with flywheel clutch;

— power shift with torque converter;

— hydrostatic;

— electric;

— number of gear speeds, forward and reverse;

— maximum travel speed in accordance with ISO 6014.

5.3 Final drives (forward and reverse)

5.4 Steering and braking

5.4.1 Service brakes and steering

Specify the type and actuating system of the service brakes and steering, for example:

— type (drum, disc, oil, dry);

— actuating system type (mechanical, air, hydraulic, electrical, combination).

5.4.2 Parking brake

Specify the type.

5.4.3 Secondary brake

Specify the type.

5.5 Hydraulic system

5.5.1 Working pumps

Specify

a) type,

b) relief pressure, and

c) pump flow at a given pressure, at rated engine speed.

5.5.2 Hydraulic motors

Specify the type and function.

5.6 System fluid capacities

Specify the following information:

a) fuel tank;

b) engine crankcase;

c) cooling system;

d) transmission;

e) final drives;

f) hydraulic systems;

g) boom and hoist mechanisms;

h) differential (if any).

5.7 Tyres

Specify the following information, as applicable:

a) size and type;

b) ply rating;

c) rim size.

5.8 Undercarriage (track)

Specify the following information, as applicable:

a) track gauge-dimension between centres of the two sets of track shoes;

b) track shoe width W;

c) crawler base L-length of track flat on the GRP;

d) ground contact area ($2 \times W \times L$);

e) number of track shoes (each side);

f) number of lower track rollers (each side).

5.9 Pipelayers mechanisms

Specify the following information as applicable:

a) counterweights (masses);

b) boom and hoist mechanisms (type and characteristics — pulley diameters, parts of line, hydraulic cylinder dimensions, etc.);

c) clutches and brakes (type and dimensions);

d) boom and load hoist drums (dimensions and rope length capacity);

e) rope diameter and minimum breaking strength;

f) boom length.

5.10 Load capacity chart

A chart of rated loads at designated load overhang distances (dimension $WW4$) shall be supplied.

5.11 Operating mass

Specify the operating mass in accordance with ISO 6016.

5.12 Shipping mass

Specify the shipping mass in accordance with ISO 6016.

ICS 01.040.53; 53.100

Price based on 17 pages