
**Machinery for forestry — Forwarders —
Terms, definitions and commercial
specifications**

*Matériel forestier — Débardeuses — Termes, définitions et spécifications
commerciales*



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Foreword

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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.

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

International Standard ISO 13860 was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 15, *Machinery for forestry*.

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Machinery for forestry — Forwarders — Terms, definitions and commercial specifications

1 Scope

This International Standard specifies terminology and required information as a general framework for identifying and describing the main dimensions and features of wheeled forwarders.

It is applicable to articulated wheeled forwarders as defined in ISO 6814.

NOTE The terminology and requirements given in this International Standard will not necessarily all apply to a specific machine. Machines may be characterized by the dimensions and features which are relevant to them.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 6814:2000, *Machinery for forestry — Mobile and self-propelled machinery — Terms, definitions and classification*.

3 Terms and definitions

See Figures 1 to 6. The figures are for illustrative purposes only and are not intended to depict specific machines.

All dimensions are with the axles parallel, unless otherwise specified.

3.1 General

3.1.1

right (left) hand

operator's right hand side (left hand side) when facing in the normal direction of travel and with the machine in its primary functional mode

3.1.2

front/rear

front or rear of the operator, respectively, when facing in the normal direction of travel and with the machine in its primary functional mode

3.1.3

ground reference plane

GRP

hard, flat, horizontal surface on which the machine is placed for measurements

3.2 Masses

3.2.1

normal operating mass

total mass of the machine as specified, fully serviced, with full fluid levels and a 75 kg operator

3.2.2

maximum operating mass

total mass of the machine as specified, fully serviced, with full fluid levels and a 75 kg operator, including all machine options with the largest tyre or hydro-inflation combination and the manufacturer's maximum specified load

3.2.3

load per axle

standard and maximum mass on both the front and rear axles

3.3 Main machine dimensions

3.3.1

total frame length

l_1

horizontal distance between the vertical planes perpendicular to the longitudinal axis passing through the farthest points on the front and rear of the machine, blade and loader excluded

3.3.2

overall length

l_2

horizontal distance from a vertical plane touching the forward-most point of the machine, blade positioned to give maximum forward reach, if so equipped, to a vertical plane touching the rearmost point of the machine, loader excluded

3.3.3

wheelbase

l_3

horizontal distance from the centre of the front axle or front bogie axle assembly to the centre of the rear axle or rear bogie axle assembly when both axles are perpendicular to the longitudinal axis

3.3.4

articulation joint to maximum blade arc

l_4

horizontal distance from the centreline of the articulation joint to a vertical line tangent to the arc of the blade's lower edge as it passes from its maximum height h_4 to the lowest blade position h_5

3.3.5

articulation joint to front of machine

l_5

horizontal distance from the centreline of the articulation joint to a vertical plane touching the farthest point forward, blade excluded

3.3.6

articulation joint to front axle

l_6

horizontal distance from the centreline of the articulation joint to the centre of the front axle or front bogie axle assembly

3.3.7**overall height** h_1

vertical distance between the GRP and a horizontal plane passing through the highest point of the machine with the loader in the retracted or travel position

3.3.8**operator enclosure height** h_2

vertical distance between the GRP and a horizontal plane passing through the uppermost point of the operator enclosure

3.3.9**blade height** h_3

vertical distance from the lower edge, resting on the GRP, to the top of the blade, decking lugs excluded

3.3.10**maximum blade lift of lower edge** h_4

maximum vertical height to which the lower edge of the blade can be raised from the GRP

3.3.11**lowest blade position** h_5

vertical distance from the GRP to the blade's lower edge with blade at its lowest position

3.3.12**ground clearance** h_6

vertical distance from the GRP to the lowest point of the machine centre portion, i.e. 25 % of the tread to either side of the longitudinal centreline

3.3.13**ground clearance at articulation joint** h_7

vertical distance from the GRP to the lowest point at the articulation joint

3.3.14**loaded tire radius** r_1

vertical distance from the GRP to the horizontal centre of the axle with the machine at normal operating mass

3.3.15**articulation joint to the centreline of the loader head** l_7

horizontal distance from the centreline of the articulation joint to the centreline of the vertical axis of loader rotation along the longitudinal axis of the machine

3.3.16**headboard (load bunk front guard) to rear axle** l_8

horizontal distance from the load side of the headboard to the centre of the rear axle or rear bogie axle assembly

3.3.17**headboard (load bunk front guard) to rear of frame** l_9

horizontal distance from the load side of the headboard to the rear of the rearmost bunk

3.3.18

overall width

w_1

horizontal distance between two vertical planes parallel to the longitudinal axis of the machine and passing through the farthest points on the two sides of this axis

3.3.19

tread

w_2

horizontal distance between two parallel vertical planes passing through the centreline of the tires on an axle

3.3.20

frame oscillation

a_1

angle that one frame will rotate from a horizontal datum, in both directions, without rotating the other frame, measured in degrees

3.3.21

axle oscillation

a_2

angle that one axle will rotate from a horizontal datum, in both directions, without rotating either frame, measured in degrees

3.3.22

clearance circle

d_1

diameter of the smallest circle that the outermost point on the machine will describe when turning, brakes unapplied, blade in travel position, unloaded

3.3.23

angle of articulation

a_3

maximum angle of frame steering movement from the straight ahead position between longitudinal centrelines of the front and rear frames, measured in degrees

3.3.24

blade width

w_3

horizontal distance between the outer edges of the blade

3.4 Loader dimensions

3.4.1

loader tilt

aa_1

maximum angle between the axis of loader rotation and vertical line, on loaders with a tilting base

3.4.2

loader rotation

aa_2

maximum loader horizontal rotation from the longitudinal centreline of the machine, measured in degrees

3.4.3

maximum loader reach

ll_1

maximum horizontal distance from the loader axis of rotation to the centreline of the grapple yoke

3.4.4**maximum loader reach at ground level** ll_2

maximum horizontal distance from the loader axis of rotation to the grapple yoke with the open grapple resting on the GRP

3.4.5**maximum loader lift height** hh_1

maximum vertical lift height from the GRP to the bottom of the grapple in tip-to-tip condition at a specified horizontal radius from the axis of rotation

3.4.6**loading height of loader at maximum reach** hh_2

vertical distance from the GRP to the bottom of the grapple in tip-to-tip condition with the loader at the maximum loader reach ll_1

3.4.7**maximum depth of loader** hh_3

maximum depth below the GRP to the bottom of the grapple in tip-to-tip condition at a specified horizontal radius from the loader axis of rotation

3.4.8**grapple height closed** hh_4

vertical distance between the centreline of the boom pivot of the grapple yoke and the bottom of the grapple in tip-to-tip condition

3.4.9**grapple height open** hh_5

vertical distance between the centreline of the boom pivot of the grapple yoke and the tips of the fully open grapple

3.4.10**area of grapple opening** A

cross-sectional area of the grapple opening in the tip-to-tip position

3.4.11**height of main boom pivot** hh_6

vertical distance between the GRP and the horizontal axis of the main boom pivot

3.5 Bogie and load space dimensions**3.5.1****bogie axle assembly centreline distance** ll_3

horizontal distance from the centreline of the bogie axle to the centreline of the front or rear tire of the bogie axle assembly

3.5.2**bogie axle assembly wheelbase** ll_4

horizontal distance between the centrelines of the front and rear tire of the bogie axle assembly

3.5.3

bogie axle assembly oscillation

aa_3

angle that the bogie axle assembly can rotate from a horizontal datum

3.5.4

cross-sectional area of log cradle

AA

effective area of the log cradle in a vertical plane perpendicular to the longitudinal axis of the machine with the height of the load defined by the height of the stakes or the headboard whichever is lower

3.5.5

width across stakes

ww_1

horizontal distance between the load side of the stakes

3.5.6

stake height

hh_7

vertical distance from the GRP to the top of the stakes

3.5.7

height of load centre

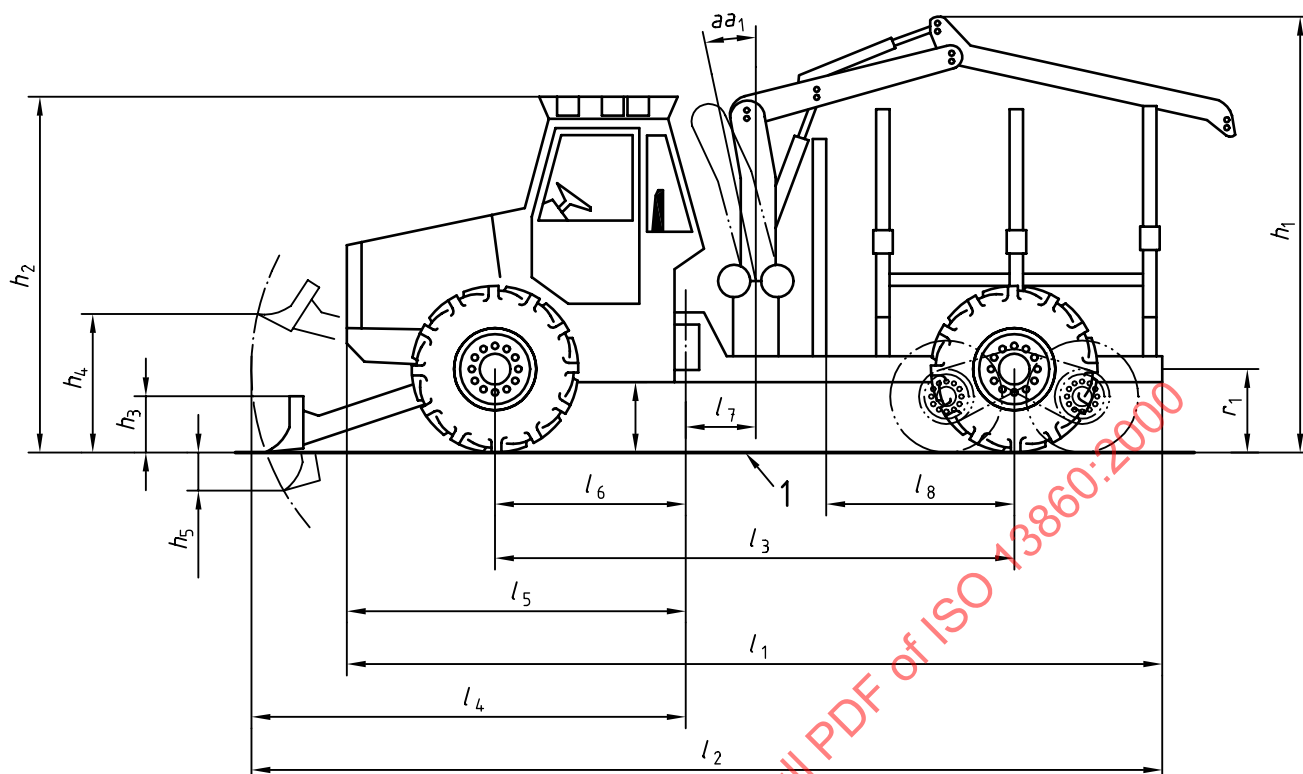
hh_8

vertical distance from the GRP to the centroid of the effective area of the log cradle

4 Required information

In addition to the identification of relevant dimensions and features as defined in clause 3, the following information shall be supplied where appropriate:

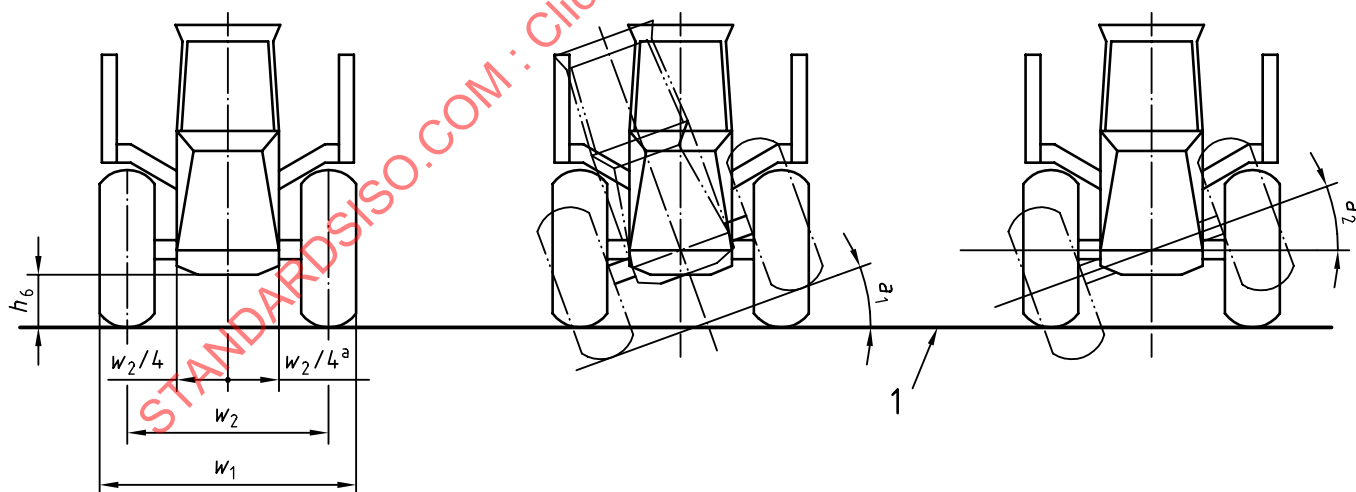
- tyre size;
- ply rating;
- inflation pressure;
- possible hydro-inflation;
- maximum and minimum for adjustable dimensions, e.g. stake height (3.5.6);
- unequal front/rear or left/right for asymmetrical dimensions, e.g. tread (3.3.19), angle of articulation (3.3.23), loader tilt (3.4.1), loader rotation (3.4.2);
- continuous or in steps, e.g. loader rotation (3.4.2).



Key

1 GRP

Figure 1 — Articulated rubber-tired forwarder



Key

1 GRP

a Used for definition h_6 only.

Figure 2 — Width, ground clearance and oscillation