
**Earth-moving machinery — Tractor-
dozers — Terminology and commercial
specifications**

*Engins de terrassement — Bouteurs — Terminologie et spécifications
commerciales*

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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 6747 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 6747:1988), of which it constitutes a technical revision.

Annex A forms an integral part of this International Standard.

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Printed in Switzerland

Earth-moving machinery — Tractor-dozers — Terminology and commercial specifications

This International Standard establishes terminology and the content of commercial literature specifications for self-propelled crawler and wheeled tractor-dozers and their equipment. It is applicable to tractors-dozers for earth-moving machinery as defined in ISO 6165.

NOTE — Figures 1, 10, 11, 12, 17, 21, 23, 24, 25, 26, 30 and the figures in annex A do not show the GRP in the correct location according to figure 19.

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 ISO and IEC maintain registers of currently valid International Standards.

ISO 3450:1996, *Earth-moving machinery — Braking systems of rubber-tyred machines — Systems and performance requirements and test procedures.*

ISO 5010:1992, *Earth-moving machinery — Rubber-tyred machines — Steering requirements.*

ISO 6016:1998, *Earth-moving machinery — Methods 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 7457:1997, *Earth-moving machinery — Measurement of turning dimensions of wheeled machines.*

ISO 7464:1983, *Earth-moving machinery — Method of test for the measurement of drawbar pull.*

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

ISO 10265:1998, *Earth-moving machinery — Crawler machines — Performance requirements and test procedures for braking systems.*

ISO 10266:1992, *Earth-moving machinery — Determination of slope limits for machine fluid systems operation — Static test method.*

3 Definitions

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

NOTE — For definitions reproduced or adapted from other International Standards, the definition given in the most recent edition of that International Standard applies.

3.1 General

3.1.1

tractor-dozer

self-propelled crawler or wheeled machine with equipment having either a dozing attachment which cuts, moves and grades material through forward motion of the machine, or a mounted attachment used to exert a push or a pull force [ISO 6165:1997]

NOTE — See figures 1 and 2.

3.1.2

base machine

machine without equipment as described by the manufacturer's specifications

NOTE — The machines should be provided with the necessary mountings to secure equipment as defined in 3.1.6.

3.1.3

equipment

set of components mounted on the base machine to fulfil the primary design function

3.1.4

attachment

assembly of components that can be mounted on the base machine for a specific use

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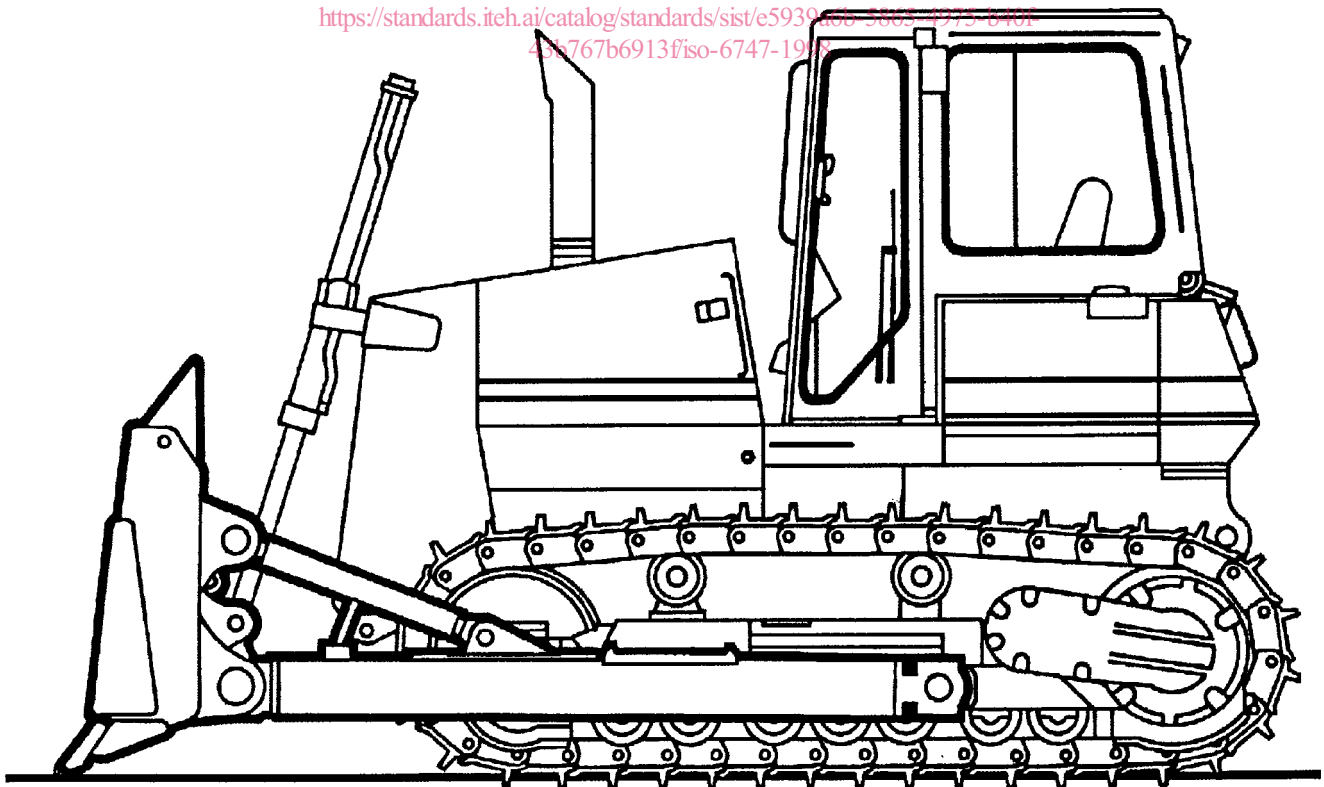


Figure 1 — Crawler-type tractor-dozer

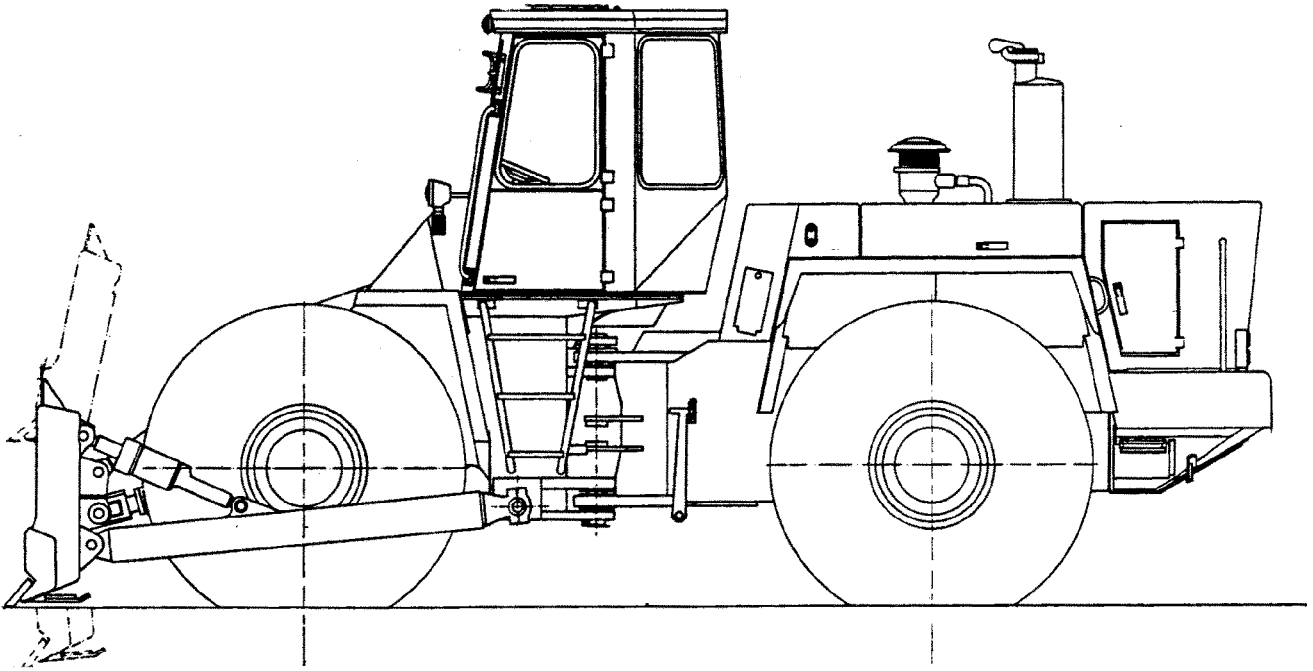


Figure 2 — Wheel-type tractor-dozer

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3.1.5

component

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

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3.1.6

dozing equipment

front blade and its frame and relevant positioning devices

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3.1.6.1

straight dozer

dozer where the blade is maintained in a position where the cutting edge is parallel to an X plane

NOTE — See figure 3.

3.1.6.2

angle dozer

dozer where the blade position may be changed so that the cutting edge is at an angle to an X plane

NOTE — See figure 4.

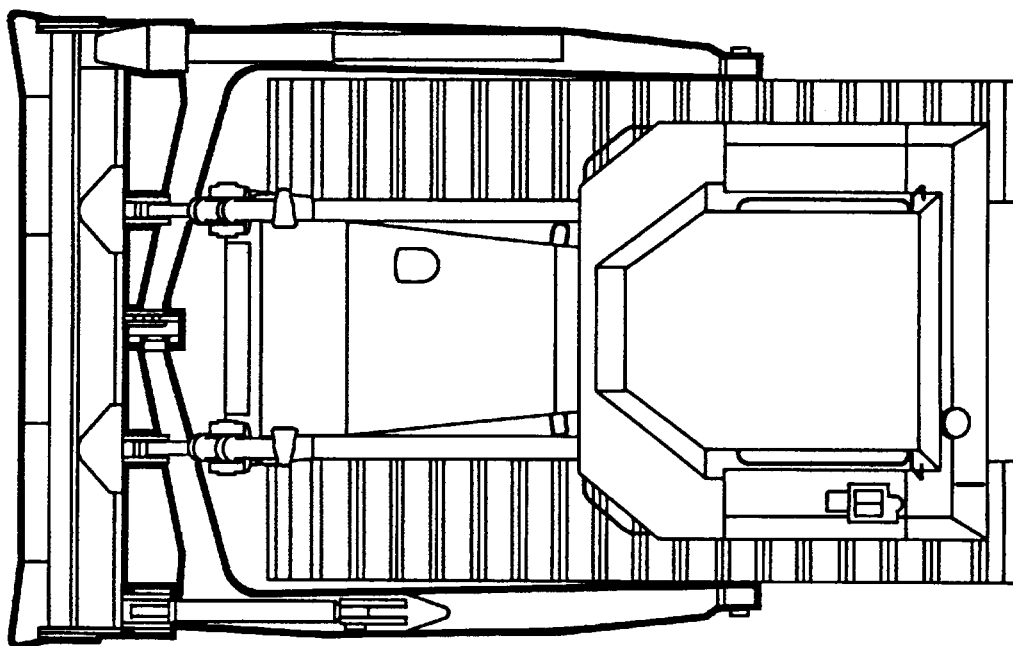


Figure 3 — Crawler tractor with straight dozer

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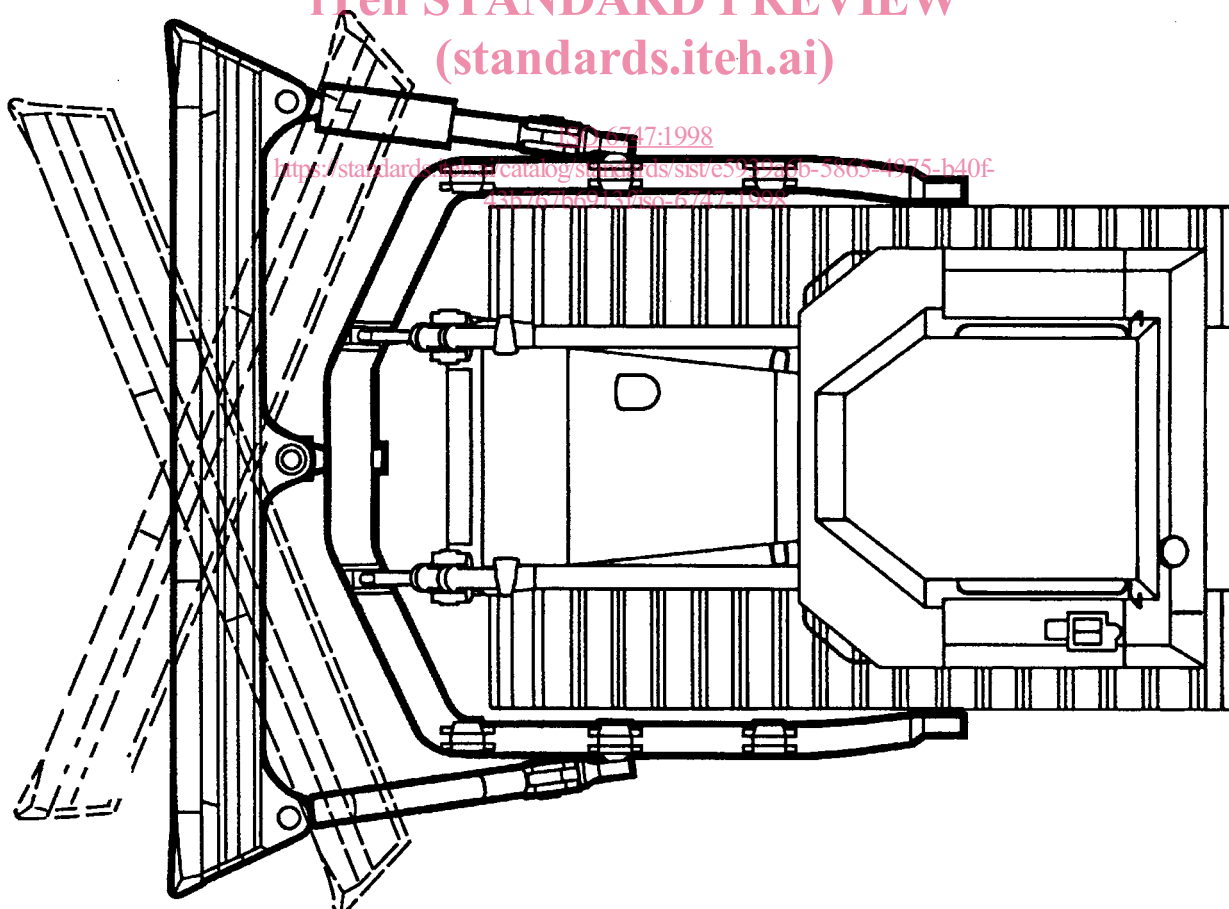


Figure 4 — Crawler tractor with angle dozer

3.1.6.3 tilt and pitch

type of movement of the blade of a straight dozer or angle dozer

NOTE — Blade operation is by hydraulic control where the operation is performed by means of a hydraulic system.

3.1.6.3.1 tilt movement

blade movement in which the position of the blade may be changed so that the cutting edge is at an angle to a Z plane

NOTE — See figure 5.

3.1.6.3.2 pitch movement

blade movement in which the upper portion of the blade may be changed in angle by pivoting it around a line parallel to the cutting edge

NOTE — See figure 6.

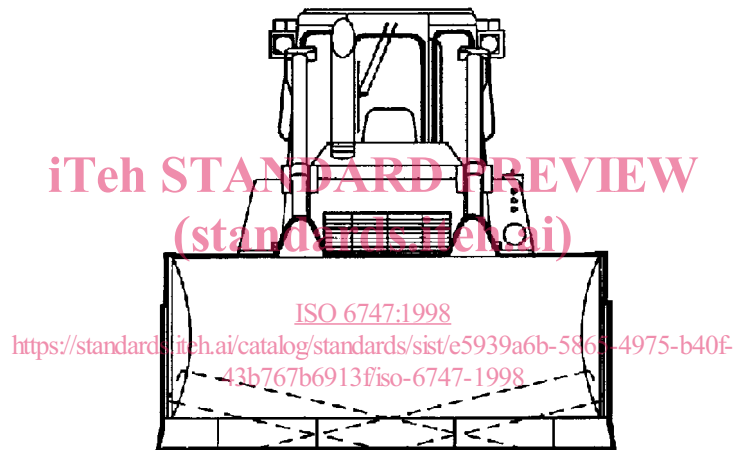


Figure 5 — Tilt movement

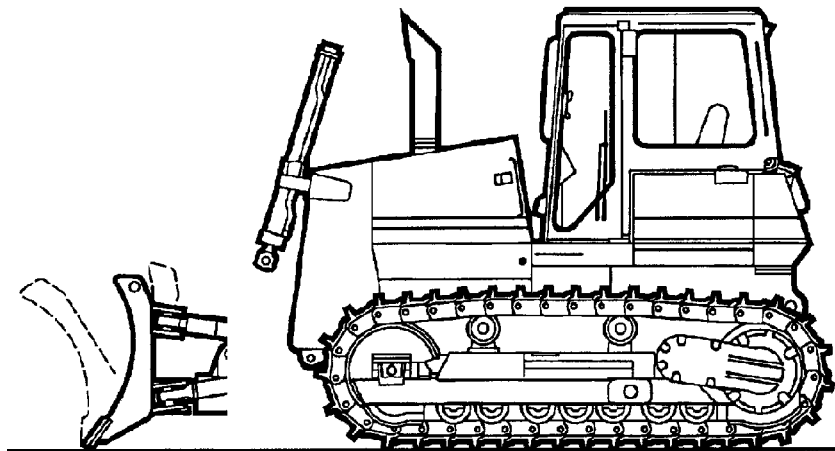


Figure 6 — Pitch movement

**3.1.7
ripper**

frame which is connected to the rear part of the base machine by means of a mounting bracket, and which is equipped with one or more teeth

NOTES

- 1 See figures 7, 8 and 9. For dimensions, see figure 23.
- 2 There are four types of ripper, as defined in 3.1.7.1 to 3.1.7.4.

**3.1.7.1
radial type**

type of ripper in which the ripping angle of the tooth tip to the ground varies according to change of the working depth

NOTE — See figure 7.

**3.1.7.2
parallelogram type**

type of ripper in which the ripping angle of the tooth tip to the ground remains constant regardless of variations in working depth

NOTE — See figure 8.

**3.1.7.3
variable type**

type of ripper in which the ripping angle of the tooth tip to the ground is variable and can be changed by the operator

NOTE — See figure 9.

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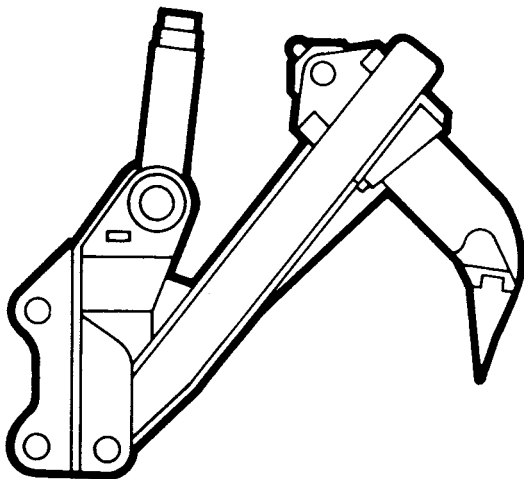


Figure 7 — Ripper — Radial type

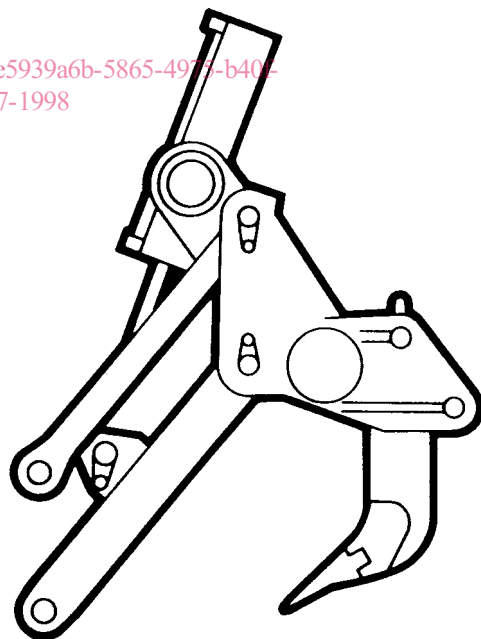


Figure 8 — Ripper — Parallelogram type

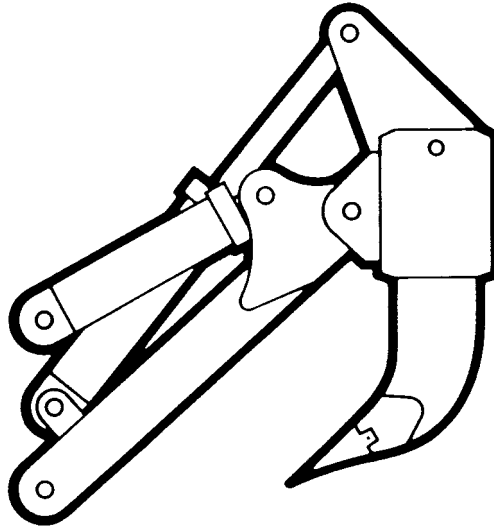


Figure 9 — Ripper — Variable type

3.1.7.4

impact ripper

ripper which exerts an additional impact force by a hydraulic pulsing system

3.1.8

winch

frame equipped with a drum and connected to the rear of the base machine

NOTES

1 See figure 10. For dimensions, see figure 24.

2 There are two types of winch operation, as defined in 3.1.8.1 and 3.1.8.2.

3.1.8.1

manually-controlled winch

type of winch which is operated by a manually controlled clutch and brake

3.1.8.2

power-controlled winch

type of winch which is operated hydraulically or by a power clutch and brake

3.1.9

swinging drawbar

frame, equipped with a swing selector bar and a drawbar, connected to the rear of the base machine

NOTE — See figure 11. For dimensions, see figure 25.

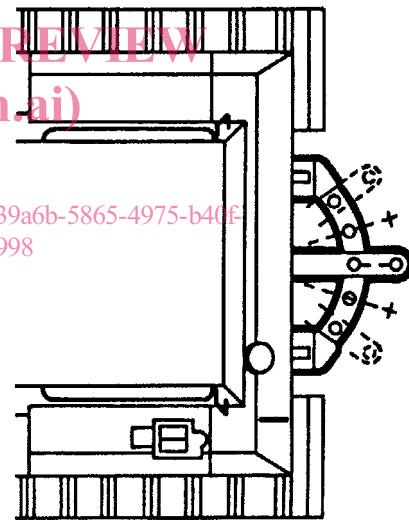
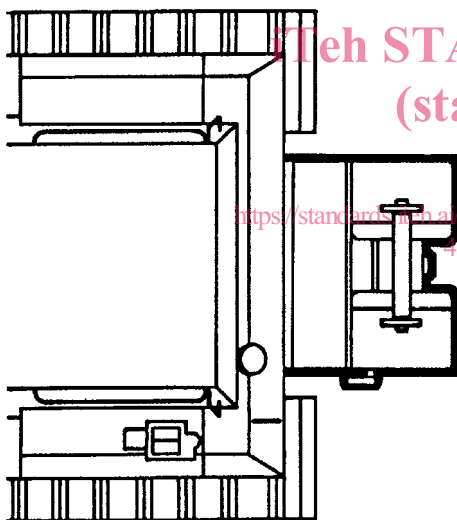
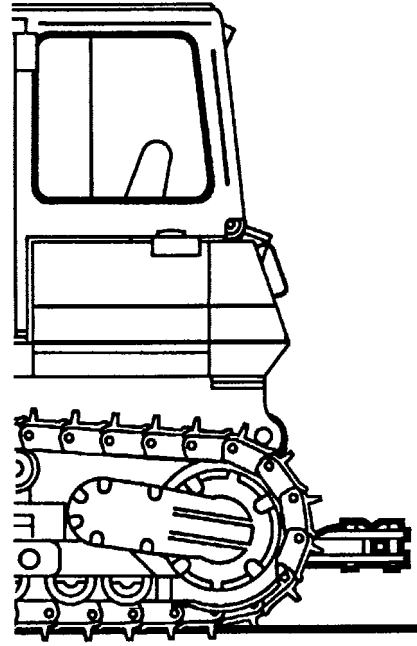
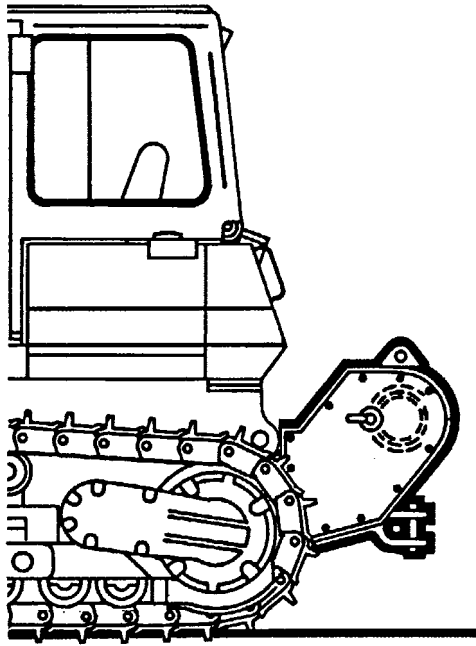


Figure 10 — Winch

Figure 11 — Swinging drawbar

3.2 Masses

3.2.1 operating mass

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

3.2.2 Axle distribution of masses of wheeled machines

3.2.2.1 axle load

load on each axle at **operating mass** (3.2.1)

3.2.2.2**maximum permissible axle load**

maximum load of each axle specified by the manufacturer

3.2.3**shipping mass****SM**

mass of the base machine without operator, with fuel level at 10 % of tank capacity, with 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]

3.2.4**cab, canopy, ROPS and/or FOPS mass**

mass of a cab canopy, ROPS or FOPS with all their components, and mountings required to secure these to the base machine [ISO 6016:1998]

3.3 Performance**3.3.1****engine net power**

[according to ISO 9249:1997]

3.3.2**maximum travel load**

maximum speed that can be obtained on a hard level surface in each of the forward and reverse gear ratios available with the machine at its operating mass

3.3.3**drawbar pull**

horizontal towing force exerted at the drawbar/hitch point, expressed in kilonewtons [ISO 7464:1983]

3.3.4**(machine) static slope capacity**

maximum slope, expressed in degrees, that the machine fluid system(s) can operate on without malfunction or damage of any fluid system, at all machine orientations specified in 3.3.4.1 and 3.4.4.2 [ISO 10266:1992]

3.3.4.1**(machine) longitudinal static slope capacity**

maximum slope, expressed in degrees, that the machine can achieve longitudinally (i.e. orientated at 0° and 180°) during the static slope evaluation without exceeding performance parameters [ISO 10266:1992]

3.3.4.2**(machine) lateral static slope capacity**

maximum slope, expressed in degrees, that the machine can achieve laterally (i.e. orientated at 90° and 270°) during the static slope evaluation without exceeding performance parameters [ISO 10266:1992]

3.3.5 Winch performance**3.3.5.1****line pull**

winch pull force measured at engine rated speed with full drum and bare drum

3.3.5.2**line speed**

winch speed measured at engine rated speed with full drum and bare drum

3.3.6**braking system**

(wheeled machines) all the components which combine together to stop and/or hold the machine, consisting of a control, means of brake actuation, the brake(s) and, if the machine is so equipped, the retarder [ISO 3450:1996]

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3.3.7 braking system

〈crawler machines〉 all the components which combine together to stop and/or hold the machine, including the controls(s), means of brake actuation, the brake(s) and all parts connecting the brake to the track [ISO 10265:1998]

3.3.8 turning radius of wheeled machines

[according to ISO 7457:1997]

3.4 Dimensions

For definitions of dimensions and the ground reference plane (GRP), see ISO 6746-1 and ISO 6746-2.

For definitions of dimensions strictly related to tractor dozers, see annex A.

4 Classification

4.1 Type of tractor-dozer

4.1.1 Undercarriage

4.1.1.1 Crawler type tractor-dozer

See figure 12.

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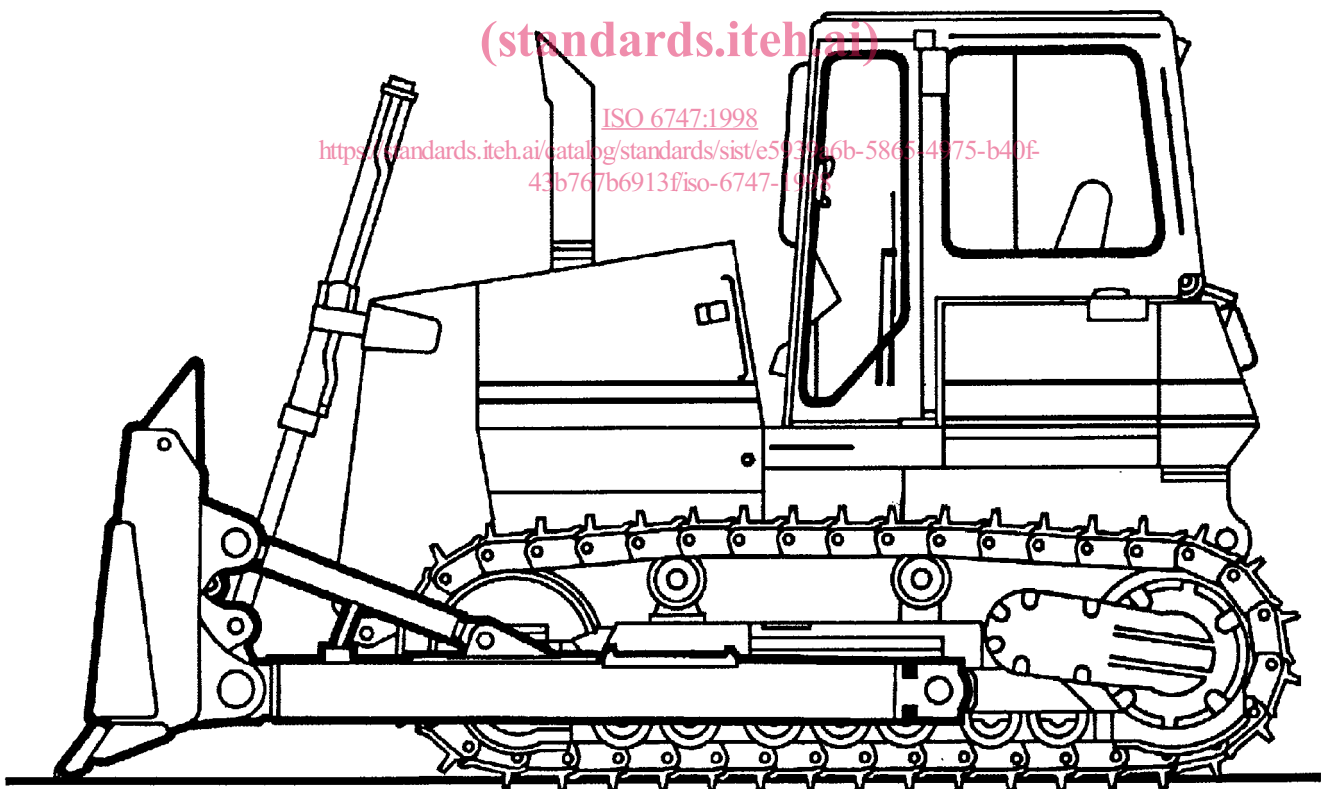


Figure 12 — Crawler type tractor-dozer