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Third edition
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Earth-moving machinery — Scrapers — Terminology and commercial specifications

Engins de terrassement — Décapeuses — 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 7133 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 4, *Terminology, commercial nomenclature, classification and ratings*.

This third edition cancels and replaces the second edition (ISO 7133:1994), which has been technically revised.

Earth-moving machinery — Scrapers — Terminology and commercial specifications

1 Scope

This International Standard establishes terminology and the content of commercial literature specifications for scrapers (including towed scrapers) and their equipment.

2 Normative references

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

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

ISO 6484, *Earth-moving machinery — Elevating scrapers — Volumetric ratings*

ISO 6485, *Earth-moving machinery — Tractor-scraper — Volumetric rating*

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

ISO 6746-2, *Earth-moving machinery — Definitions of dimensions and codes — Part 2: Equipment and attachments*

ISO 7457, *Earth-moving machinery — Determination of turning dimensions of wheeled machines*

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 6746 and the following apply.

3.1 General

3.1.1
scraper
self-propelled or towed crawler or wheeled machine which has a bowl with a cutting edge positioned between the axles, and which cuts, loads, transports, discharges and spreads material through its forward motion

Note 1 to entry: The loading through a forward motion can be assisted by a powered mechanism (elevator) fixed to the scraper bowl.

[SOURCE: ISO 6165:2012, 4.7]

3.1.2
towed scraper
scraper that is not self-propelled but which is propelled instead by a towing machine on which the operator's station is located

[SOURCE: ISO 6165:2012, 4.7.1]

3.1.3
base machine
machine with a cab or canopy and operator-protective structures if required, without equipment or attachments but possessing the necessary mountings for such equipment and attachments scraper

[SOURCE: ISO 6746-1:2003, 3.3]

3.1.4
equipment
set of components mounted onto the base machine to fulfil the primary design function

3.1.5
attachment
optional assembly of components that can be mounted onto the base machine for a specific use

3.1.6
component
part or an assembly of parts of a base machine, equipment or an attachment

3.2 Masses

3.2.1
operating mass
mass of the base machine with empty bowl, equipment specified by the manufacturer, operator (75 kg), full fuel tank and full lubricating, hydraulic and cooling systems

3.2.2
payload
manufacturer's rated mass that can be carried in the scraper bowl

3.2.3
loaded mass
sum of the operating mass and the payload loaded in accordance with ISO 6485

3.2.4
axle distribution
percentage of machine mass or the actual mass of each axle, empty and loaded

3.2.5
shipping mass
mass of the base machine with empty bowl, without operator, with full lubricating, hydraulic and cooling systems, 10 % of fuel tank capacity and with or without equipment, cab, canopy and/or operator protective structure, as stated by the manufacturer

3.2.6
cab [canopy] [ROPS] [FOPS] mass
mass of cab [canopy] [ROPS (roll-over protective structure)] [FOPS (falling-object protective structure)] with all components and mountings required to secure it to the base machine

3.3 Modes of operation

3.3.1
push-pull or dual loading
mode of operation which allows one scraper to assist in loading another by pushing or pulling through engagement devices which usually include push plates, a hook and a bail

3.4 Performance

3.4.1
net power
power obtained on a test bed at the end of the crankshaft or its equivalent, at the corresponding engine speed, with the equipment and auxiliaries listed in ISO 15550:2002, Table 1, column 2, and required in column 3 (fitted for engine net power test)

Note 1 to entry: If the power measurement can only be carried out with a mounted gearbox, the losses in the gearbox should be added to the measured power to give the net engine power.

[SOURCE: ISO 15550:2002, 3.3.3.1, modified.]

3.4.2
maximum travel speed
maximum speed that can be obtained on hard level surfaces in each of the forward and reverse gear ratios available, with scraper bowl empty

3.4.3
rimpull
force available between the tyre and the ground to propel the scraper

3.4.4
rimpull with direct drive transmission
rimpull calculated or measured at the rated engine speed and at maximum engine torque in each forward speed

Note 1 to entry: The maximum pull can be limited by mass and traction conditions.

3.4.5
rimpull with power shift transmission [electric drive] [hydrostatic drive]
rimpull given by the calculated or measured pull versus machine speed curves in each forward gear range

Note 1 to entry: The maximum pull can be limited by mass and traction conditions.

4 Base machine

4.1 Types of scrapers

Scrapers shall be classified according to the following attributes.

4.1.1 Method of loading

The method of loading may be

— open-bowl loading (see Figure 1), or

— elevated loading (see Figure 2).

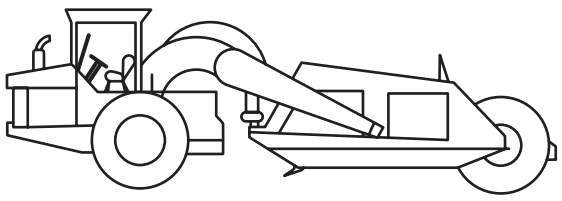


Figure 1 — Open-bowl loading

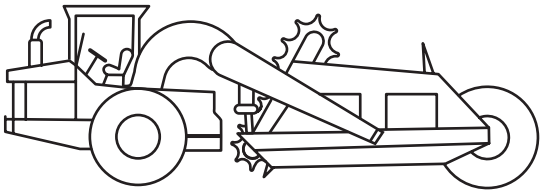


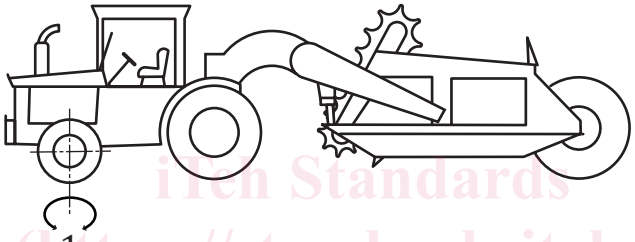
Figure 2 — Elevated loading

4.1.2 Steering system

The steering system may be

— front-wheel steer (see Figure 3), or

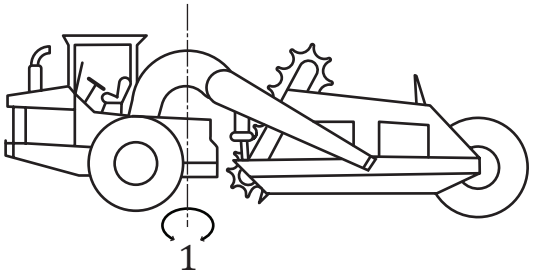
— articulated steer (see Figure 4).



Key

1 steerable wheels

Figure 3 — Front-wheel steer



Key

1 turning centre

Figure 4 — Articulated steer

4.1.3 Number of axles

The base machine may have

— two axles (see Figure 5), or

— three axles (see Figure 6).

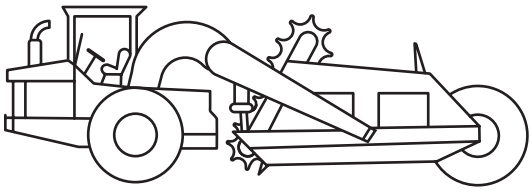


Figure 5 — Two axles

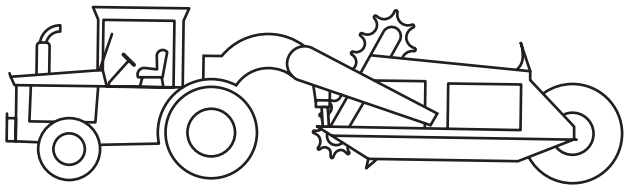


Figure 6 — Three axles

4.1.4 Number of engines

The base machine may have:

— one engine (see Figure 7), or

— two engines (see Figure 8).

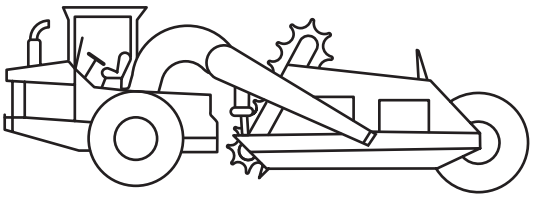


Figure 7 — One engine

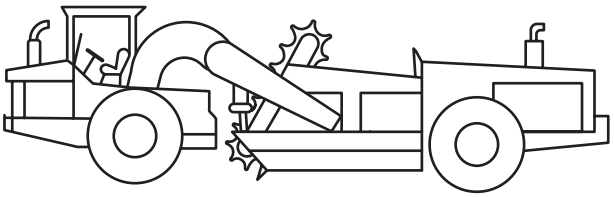


Figure 8 — Two engines

4.1.5 Drive system

The drive system may be

— front-wheel drive (see Figure 9),

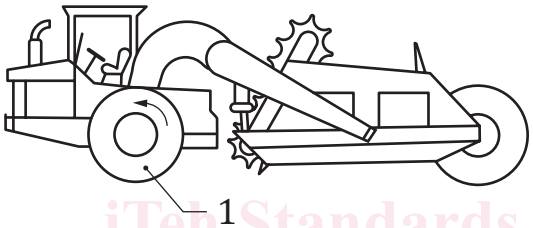
— all-wheel drive (see Figure 10),

— centre-axle drive (see Figure 11), or

— in the case of towed scrapers, no drive (see Figure 12).

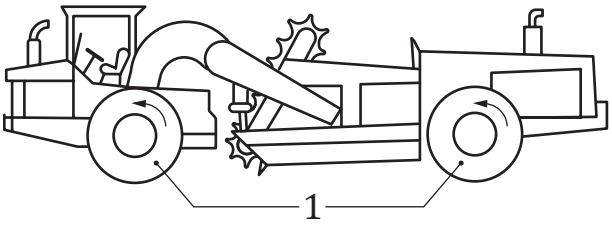
NOTE 1 Scrapers require the application of tractive effort to load material into the bowl. This tractive effort can be developed by the scraper itself, by another scraper temporarily or permanently connected, or by a pushing tractor. The tractive effort for a towed scraper is supplied by the towing machine.

NOTE 2 Elevating scrapers have a powered mechanism fixed to the scraper bowl to assist in loading material.



Key
1 drive wheels

Figure 9 — Front-wheel drive



Key
1 drive wheels

Figure 10 — All-wheel drive

