

TC 127

International Standard



7132

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Earth-moving machinery — Dumpers — Terminology and commercial specifications

Engins de terrassement — Tombereaux — 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7132 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*.

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Earth-moving machinery — Dumpers — Terminology and commercial specifications

1 Scope

This International Standard establishes terminology and the content of commercial literature specifications for self-propelled dumpers.

NOTE — In the French text, "tombereau" is used for dumper, and is the object of an official regulation in France.

2 Field of application

This International Standard applies to dumpers as defined in ISO 6165.

3 References

ISO 1585, *Road vehicles — Engine test code — Net power.*

ISO 3450, *Off-highway earth-moving machinery — Minimum performance criteria for brake systems.*

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

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

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

ISO 6483, *Earth-moving machinery — Dumper bodies — Volumetric rating.*

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

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

4 General definitions

4.1 dumper : A self-propelled wheeled machine, having an open body, which transports and dumps or spreads material. Loading is performed by means external to the dumper. (See ISO 6165.)

4.2 base machine : A dumper as described by the manufacturer specifications.

4.3 equipment : A set of components mounted onto the base machine to fulfil the primary design function.

4.4 attachment : An optional assembly of components that can be mounted onto the base machine for a specific use.

4.5 component : Part of an assembly of parts of a base machine, equipment or an attachment.

5 Base machine

5.1 Types of dumpers

5.1.1 Method of dumping

5.1.1.1 Rear dump (figure 1)

5.1.1.2 Bottom dump (figure 2)

5.1.1.3 Side dump (figure 3)

5.1.2 Steering system

5.1.2.1 Front wheel steer (figure 4)

5.1.2.2 Articulated steer (figure 5)

5.1.3 Drive system

5.1.3.1 Rear wheel drive (figure 6)

5.1.3.2 All wheel drive (figure 7)

5.1.3.3 Centre axle drive (figure 8)

5.1.4 Number of axles

5.1.4.1 Two axles (figure 9)

5.1.4.2 Three axles (figure 10)

5.1.4.3 More than three axles (figure 11)

Method of dumping (see 5.1.1)

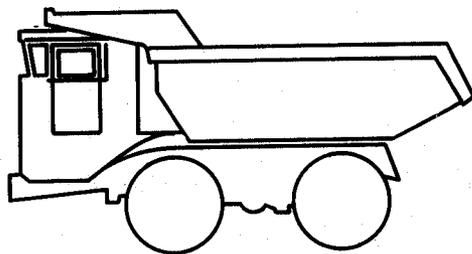


Figure 1 — Rear dump

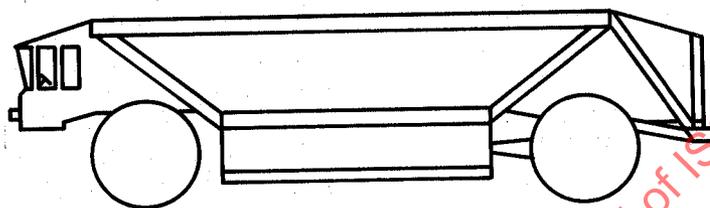


Figure 2 — Bottom dump

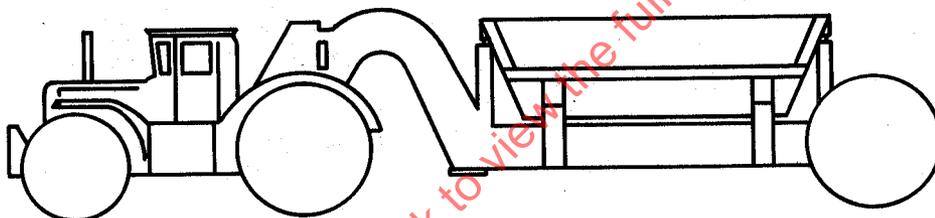


Figure 3 — Side dump

Steering system (see 5.1.2)

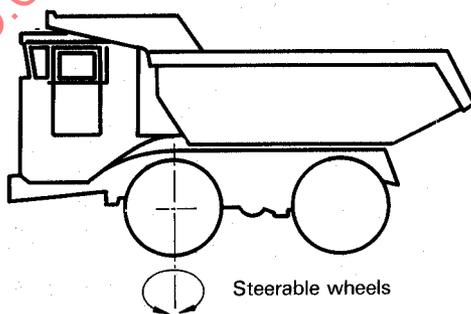


Figure 4 — Front wheel steer

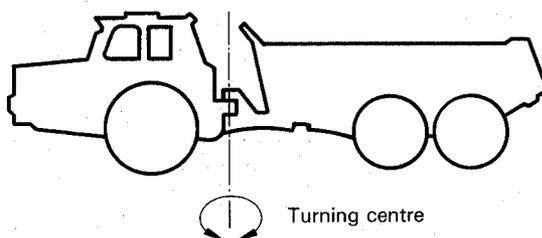


Figure 5 — Articulated steer

Drive system (see 5.1.3)

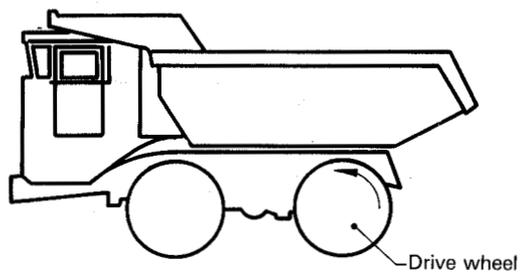


Figure 6 — Rear wheel drive

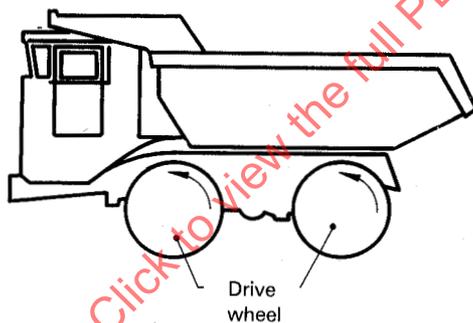


Figure 7 — All wheel drive

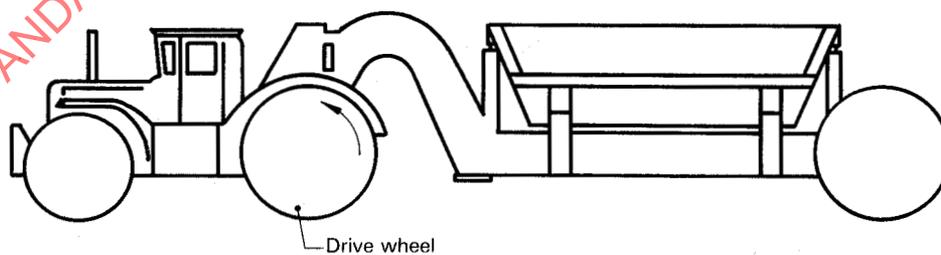


Figure 8 — Centre axle drive

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Number of axles (see 5.1.4)

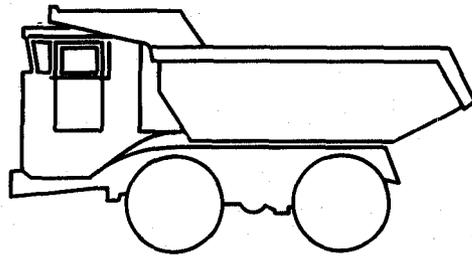


Figure 9 — Two axles

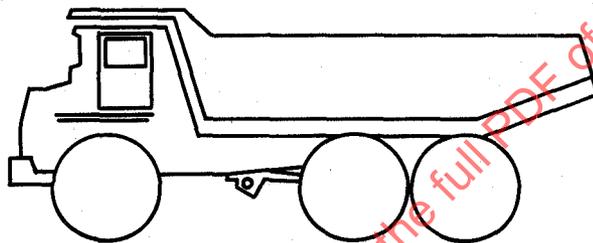


Figure 10 — Three axles

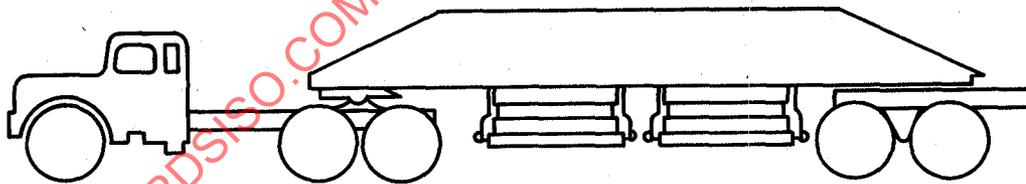


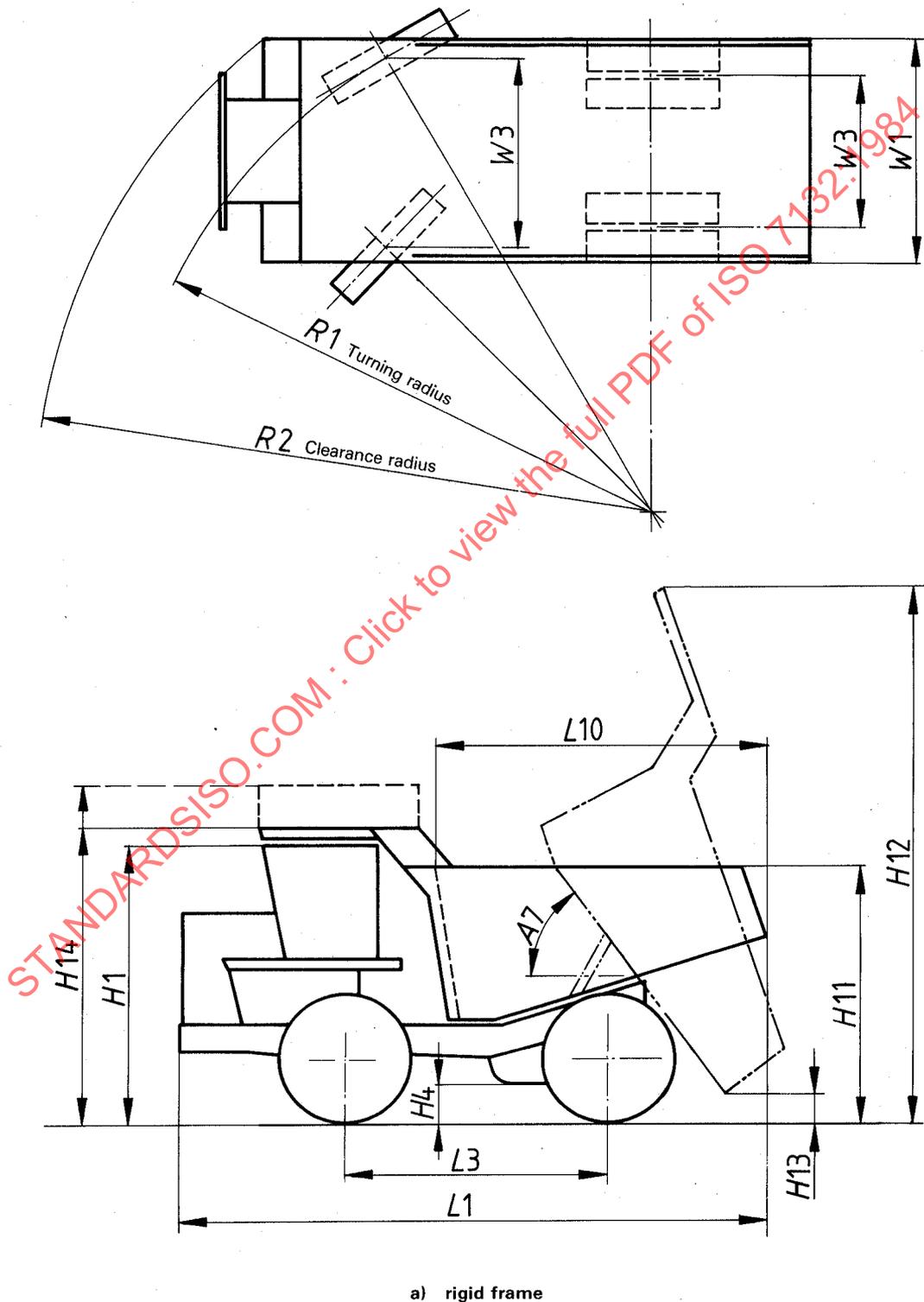
Figure 11 — More than three axles

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5.2 Dimensions (see figure 12)

For definitions of dimensions, see ISO 6746/1.

For definitions of dimensions strictly related to dumpers, see the annex.



a) rigid frame

Figure 12 — Dimensions of base machine (dumper)

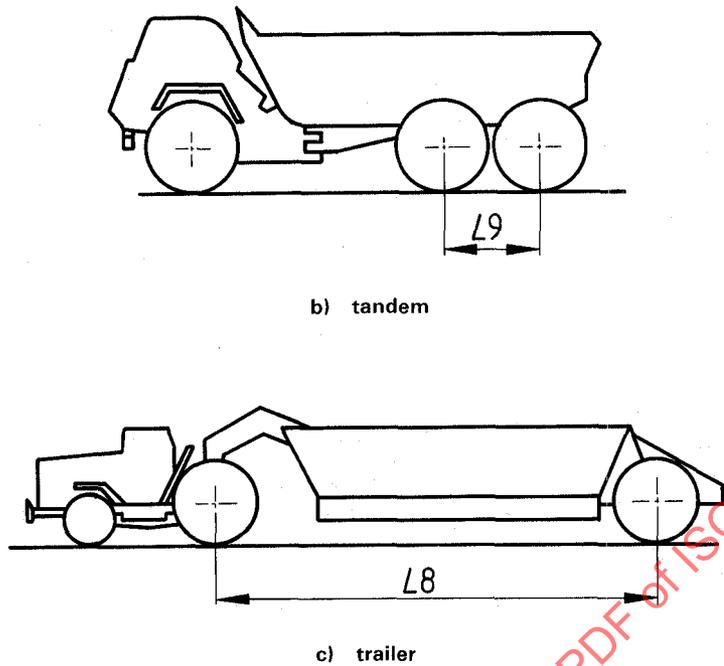


Figure 12 (concluded)

5.3 Masses

5.3.1 operating mass : The mass of the base machine with empty body, operator (75 kg), full fuel tank and full lubricating, hydraulic and cooling systems.

5.3.2 loaded mass : The sum of the operating mass and the manufacturer's rated payload.

5.3.3 axle distribution : Percentage of machine mass or the actual mass at each axle, empty and loaded.

5.3.4 shipping mass : The mass of the base machine with empty body, without operator, with full lubricating, hydraulic and cooling systems, 10 % of fuel tank capacity and with or without cab, canopy and ROPS¹⁾, as stated by the manufacturer.

5.3.5 cab, canopy, ROPS mass : The mass of cab, canopy and ROPS with all components and mountings required to secure these to the base machine.

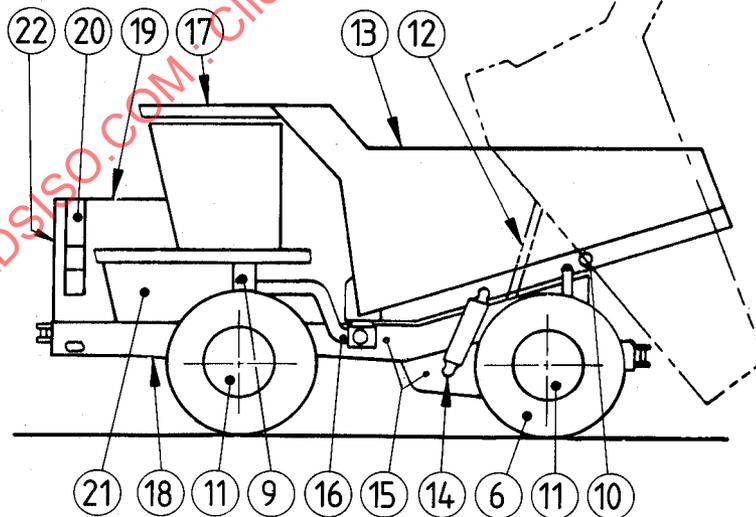
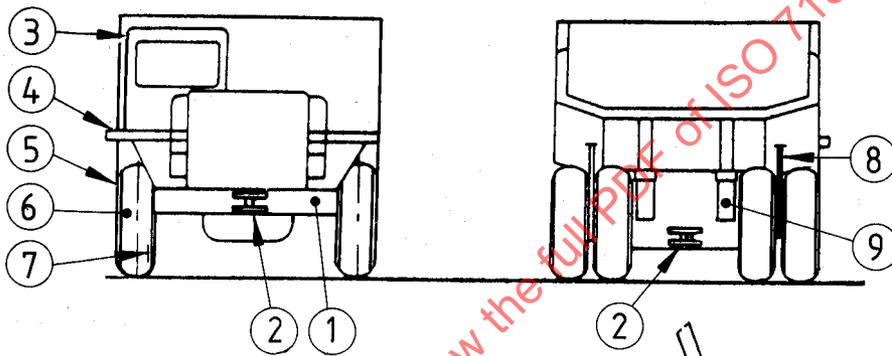
1) ROPS : Roll-over protective structure.

5.4 Nomenclature (see diagram numbers)

5.4.1 Component nomenclature, two axle rear dump

- 1 Bumper
- 2 Pin, towing
- 3 Cab
- 4 Fender
- 5 Wheel
- 6 Tyre
- 7 Brake
- 8 Bar, rock ejector
- 9 Suspension (opt.)

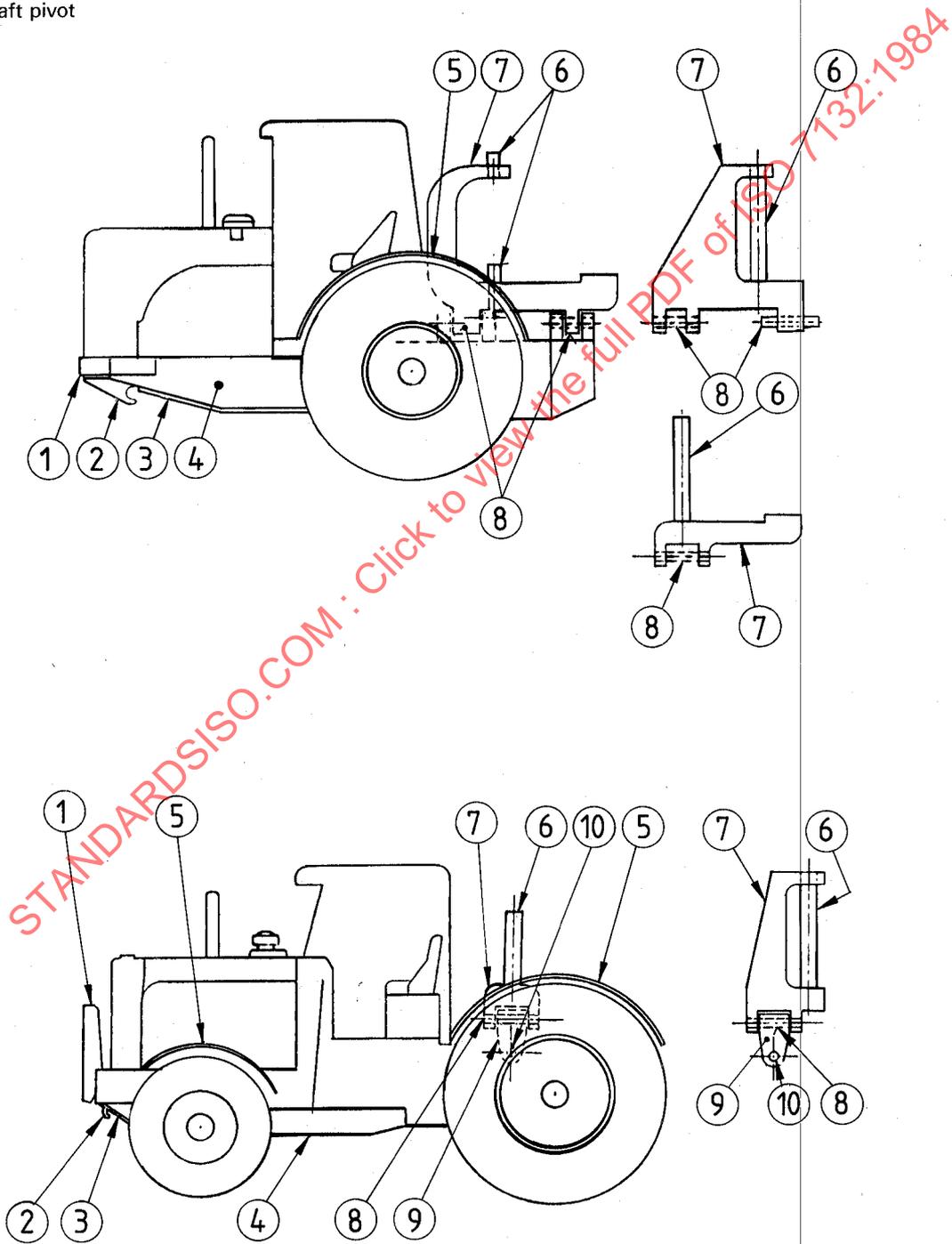
- 10 Pin, body pivot
- 11 Axle(s)
- 12 Prop, raised body
- 13 Body
- 14 Cylinder, dump
- 15 Drive system
- 16 Exhaust, atmospheric or body heating
- 17 Canopy
- 18 Frame, main
- 19 Hood
- 20 Ladder
- 21 Powerplant
- 22 Grille



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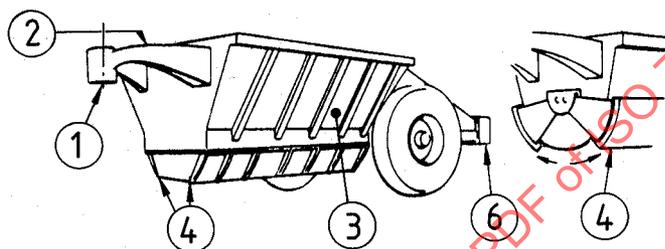
5.4.2 Component nomenclature, two and four wheel tractor

- 1 Bumper
- 2 Hook, pull
- 3 Guard, bottom
- 4 Frame, main
- 5 Fender
- 6 Kingpin, hitch
- 7 Hitch
- 8 Pin, oscillating pivot
- 9 Yoke, hitch
- 10 Pin, fore and aft pivot

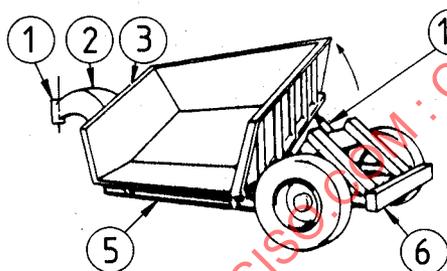


5.4.3 Component nomenclature, trailing units

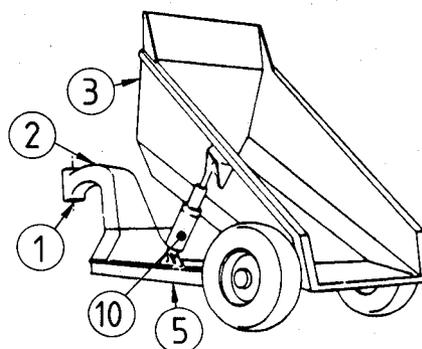
- 1 Housing, kingpin
- 2 Gooseneck
- 3 Body
- 4 Doors
- 5 Frame, main
- 6 Bumper
- 7 Frame, draft
- 8 Ejector
- 9 Tailgate
- 10 Cylinder, dump



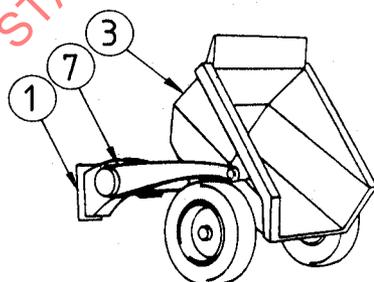
Bottom dump



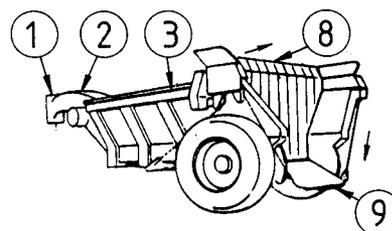
Side dump



Rear dump



Rear dump



Rear dump

6 Performance terminology

6.1 ISO net power (engine) : See ISO 1585. 1)

6.2 maximum travel speed : See ISO 6014.

6.3 rimpull : Force available between the tyre and the ground to propel the dumper.

6.3.1 rimpull with direct drive transmission : Rimpull calculated or measured at the rated engine speed and at the maximum engine torque in each forward speed. The maximum pull may be limited by mass and traction conditions.

6.3.2 rimpull with powershift transmission, electric drive or hydrostatic drive : Rimpull is given by the calculated or measured pull versus machine speed curves in each forward gear range. The maximum pull may be limited by mass and traction conditions.

6.4 empty body dump and return time : Simulated payload discharge time and body, door or ejector return time, engine at rated rpm.

6.5 steering capability

6.5.1 turning radius : See ISO 7457.

6.5.2 machine clearance diameter : See ISO 7457.

6.6 braking performance : See ISO 3450.

6.7 payload : Manufacturer's rated mass that can be carried in the body.

7 Commercial literature specifications — SI units (examples)

7.1 Engine (specify characteristics)

Manufacturer and model.
 Diesel or spark ignition.
 Type of cycle (2 or 4 stroke).
 Naturally aspirated, mechanically supercharged, or turbo-charged.
 Number of cylinders.
 Bore.
 Stroke.
 Displacement.
 Cooling system (air or water cooled).
 Type of fuel.
 Power, flywheel net : at rpm.
 Torque, maximum : at rpm.
 Starter type.
 Electrical system, V.

7.2 Transmission (specify type)

Examples :

Manual shift with flywheel clutch.
 Power shift with torque converter.
 Hydrostatic.
 Electric.
 Number of speeds, forward and reverse.
 Travel speeds (forward and reverse).

(A graph of rimpull versus speed should be shown.)

7.3 Drive axle(s) (specify type)

Examples :

Steerable.
 Fixed, oscillating and/or suspended.
 Hydrostatic.
 Electric.
 Bevel gear and pinion.
 Differential : standard, non-slip, lock-up.
 Planetary final drive.

7.4 Steering (specify type)

(See ISO 5010.)

Examples :

Articulated frame.
 Front wheel steer.
 Boosted, manual, hydrostatic.
 Emergency steer method.

7.4.1 Performance

Turning radius :, left and right.
 Machine clearance diameter

7.5 Brakes

7.5.1 Service brakes

Examples :

Type (Drum, disc, wet or dry).
 Actuating system type (mechanical, air, hydraulic, electrical, combination, etc.)

7.5.2 Parking brake (specify type)

7.5.3 Secondary brake (specify type)

7.5.4 Retarding brake

Type.
 Actuating system.

7.5.5 Brake performance (specify)

(See ISO 3450.)

1) ISO/TC 127 is currently drawing up an engine test code.

7.6 Tyres

Size and type.
Ply rating.
Rim size.

7.7 Hydraulic system**7.7.1 Body raise**

Pump flow : at pressure and engine rated rpm.
Relief valve opening pressure :
Pump type.
Body raise cylinders : number, type.
Body raise time :

7.7.2 Steering

Pump flow : at pressure.
Pump type.
Relief valve opening pressure :

7.8 Suspension

At individual wheel or complete axle.

7.8.1 Type (specify)

Examples :

Mechanical spring : coil, leaf.
Shock absorber cylinder : air, oil, air/oil.
Elastomer.
Pneumatic.

7.8.2 Capacity

Stroke.

7.8.3 Load/deflection rate

Empty.
Loaded.

7.9 Rated body capacity, in cubic metres (see ISO 6483)**7.10 Masses**

Distribution, empty operating mass :

- front axle;
- drive axle;
- trailer axle.

Total empty operating mass.

Payload, rated.

Distribution, loaded mass :

- front axle;
- drive axle;
- trailer axle.

Total loaded mass.

7.11 System fluid capacities

Fuel tank.
Engine crankcase.
Cooling system.
Hydraulic system.
Transmission.
Differential.
Final drive.

7.12 Overall dumper dimensions (supply outline drawing)

Example of significant dimensions :

Maximum total height without body.
Ground clearance, axles.
Ground clearance, bottom dump body, doors closed.
Ground clearance, under open doors.
Loading height.
Dump height.
Discharge height.
Maximum height with body.
Maximum width.
Tread.
Maximum length.
Wheelbase.
Tandem centre distance.
Turning radius.
Clearance diameter.

Annex

Dimensions – Symbols, terms and definitions

Symbol	Term	Definition	Drawing
H11	Loading height	Distance on "Z" coordinate between the ground reference plane (GRP) and the highest point of the load-containing sides, body empty.	
H12	Dump height	Distance on "Z" coordinate between the GRP and the highest point on the dumper, body fully raised.	
H13	Discharge height (rear or side dump)	Distance on "Z" coordinate between the GRP and the lowest point on the body, body fully raised.	
H14	Maximum height of dumper body or hitch	Distance on "Z" coordinate between the GRP and the highest point on the dumper body or the hitch connection, dumper body in loading position with spillage guard if fitted, body empty.	