BS ISO 11525-2:2015

BSI Standards Publication

Rough-terrain trucks — User requirements

Part 2: Slewing variable-reach trucks

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National foreword

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A list of organizations represented on this committee can be obtained on request to its secretary.

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Part 2: Slewing variable-reach trucks

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Partie 2: Chariots rotatifs à portée variable

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 110, *Industrial trucks*, Subcommittee SC 4, *Rough-terrain trucks*.

ISO 11525 consists of the following parts, under the general title *Rough-terrain trucks — User requirements*:

— *Part 1: General requirements*

— *Part 2: Slewing variable-reach trucks*

— *Part 4: Additional requirements for variable-reach trucks handling freely suspended loads*

— *Part 5: Interface between rough-terrain truck and integrated personnel work platform*

User requirements for lorry-mounted trucks are to form the subject of a future part 2 of ISO 20297.

Introduction

This International Standard is one of a set of standards produced by ISO/TC 110/SC 4 as part of its programme of work regarding standardization of terminology, general safety, performance and user requirements for rough-terrain trucks.

Slewing variable-reach trucks (as defined in ISO 10896-2) are known by a variety of terms including "rotating telehandlers" and "multi-purpose rotating handlers".

For unique applications, these trucks can be equipped with a variety of attachments (e.g. jibs, winches, jibs with winch and clamp, mowers, sweepers).

Additional user requirements for variable-reach trucks handling freely suspended loads are covered in ISO 11525-4.

Users need to take into consideration that certain features and characteristics of these trucks are unique and require specific methods for use and training of operators. In addition to general user requirements, these specific methods are also covered in this part of ISO 11525.

INTERNATIONAL STANDARD ISO 11525-2:2015(E)

Rough-terrain trucks — User requirements —

Part 2: Slewing variable-reach trucks

1 Scope

This part of ISO 11525 gives specific requirements relating to the use of slewing variable-reach rough-terrain trucks (hereafter referred to as trucks), as defined in ISO 10896-2.

It is intended to achieve the following:

a) the prevention of personal injuries, property damage and accidents;

b) the establishment of criteria for inspection, maintenance, operation and training.

For general user requirements for (non-slewing) variable-reach trucks, refer to ISO 11525-1.

For additional user requirements for variable-reach trucks handling freely suspended loads, refer to ISO 11525-4.

National or local requirements can apply, which could be more stringent.

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 5057, *Industrial trucks — Inspection and repair of fork arms in service on fork-lift trucks*

ISO 11525-1, *Rough-terrain trucks — User requirements — Part 1: General requirements*

ISO 10896-2, *Rough-terrain trucks — Safety requirements and verification — Part 2: Slewing variable-reach trucks*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 11525-1 and ISO 10896-2 and the following apply.

3.1
authorized person
person approved or assigned to perform a specific task or tasks at a specific location or locations at a worksite

3.2
examiner
competent person (3.7) who tests the competency of the *trainee* (3.11)

3.3
maintenance
act of upkeep, including inspection, lubrication, cleaning, adjustment and scheduled parts replacement

3.4
modification
change to the truck that affects its *operation* (3.5), *stability* (3.9), capacity or safety

3.5
operation
performance of functions of a truck within the scope of its specifications and in accordance with the manufacturer's instructions, work rules and applicable governmental regulations

3.6
operator
competent (3.7) and *authorized person* (3.1) who controls the *operation* (3.5) of the truck

3.7
competent person
person who has acquired, through training, qualification, experience or a combination of these, the knowledge and skill enabling that person to correctly perform the required tasks

3.8
attachment bracket
quick coupler
device fitted at the end of the boom to facilitate the quick interchange of attachments

3.9
stability
state of the truck in which it does not overturn, described technically as the state in which the sum of the moments acting to overturn the slewing truck is less than the sum of the moments tending to resist overturning

Note 1 to entry: Conditions that can affect stability include slewing of the upper structure, ground and floor conditions, gradient, wind, speed and loading (trucks equipped with attachments behave as partially loaded trucks even when operated without a load on the attachment), dynamic and static forces, incorrect tyre inflation and the judgment exercised by the *operator* (3.6).

3.10
trainer
competent person (3.7) who conducts the training of the truck operator (3.6)

3.11
trainee
person who is being trained to become a truck *operator* (3.6)

3.12
user
person or entity responsible for assigning an *operator* (3.6) to operate a truck and specifying the tasks to be performed

Note 1 to entry: Depending on national or other regulations, or local practice, this term can refer to one or more of the following entities: owner, employer, custodian, dealer or entity placing the product on the market.

3.13
responsible entity
person or entity with responsibility for the design, specification, procurement, fabrication, manufacture, assembly, provision of information and testing of a slewing truck

Note 1 to entry: Depending on national or other regulations, or local practice, this term can refer to one or more of the following entities: manufacturer, installer, custodian, dealer, designer or entity placing the product on the market.

3.14
normal access configuration
normal egress configuration
configuration of the truck on tyres, with its slewing structure in the forward aligned position, with stabilizing devices in transport position, and with the boom lowered and fully retracted

4 General safety requirements

4.1 Principles

This part of ISO 11525 shall be supplemented by good management practices, safety controls and application of sound principles of safety, training, inspection, maintenance, application selection and operation. All data available regarding the parameters of intended use and expected environment shall be considered. Those with direct control over the application and operation of the truck shall be responsible for ensuring good safety practices.

NOTE Different operating conditions can require additional safety precautions, training and special safe operating procedures.

The operation of any truck is subject to certain hazards that can be protected against only by the exercise of care and common sense. It is essential to have competent persons trained in the intended use, safe operation, maintenance and service of this equipment.

The user shall ensure that the operator understands that safe operation of the truck is also the operator's responsibility.

The user shall ensure that the operator's mental or physical condition will not impair his/her ability to operate the truck.

In addition to specific training, application selection and operation of the truck, the user shall take the following fundamental unique characteristics for trucks that slew into consideration:

— these trucks are primarily designed for handling supported loads on forks;

— the slewing movement of the upper structure can reduce the need for frequent repositioning of the truck;

— other attachments can be fitted.

Other applicable parts of ISO 11525, together with this part of ISO 11525, shall be referred to for specific applications (e.g. handling of freely suspended loads).

4.2 Operator's manual

The user shall ensure that the operator's manual and any additional safety manuals provided by the manufacturer with the truck are always available to the operator and maintenance personnel.

The user and/or the operator shall refer to the responsible entity should doubts on either the use of the truck or the interpretation of the operator's manual arise.

4.3 Modifications or alterations

Except as provided below, no modifications or alterations to a truck that can affect its capacity, stability or safe operation shall be made without the prior written approval of the original truck manufacturer or its successor. When the truck manufacturer or its successor approves a modification or alteration, the user shall be responsible, prior to operation, for ensuring that appropriate changes are made to information plate(s), documents, certificates, labels, tags and operator manuals.

If the truck manufacturer is no longer in business and there is no successor, modifications or alterations to the truck shall be carried out under the following conditions:

a) the design, testing and implementation of the modification or alteration is made in accordance with ISO 10896-2 by a competent person;

b) a permanent record is kept of the design, tests and implementation of the modification or alteration;

c) appropriate changes are made to the information plate(s), documents, certificates, labels, tags and operator's manual(s);

d) a permanent and readily visible label is affixed to the truck stating the manner in which the truck has been modified or altered, together with the date of the modification or alteration, and the name of the person or organization responsible for the design, testing and implementation of the modifications.

4.4 Manufacturer's bulletins

The user shall comply with the applicable bulletins as directed by the responsible entity.

4.5 Operator qualifications

Users shall allow only competent and authorized persons to operate a truck. Truck operators shall be competent to operate the equipment safely, in addition to being trained in accordance with this part of ISO 11525.

4.6 Operator's responsibility for training

Before operating any truck, the operator shall be trained in accordance with 4.7 and shall have read and be familiar with the operator's manual(s) and any other safety information provided by the manufacturer and user on the particular truck type being operated, the application and environment in which the slewing truck is to be used and any attachments used.

4.7 Operator training

4.7.1 Operator training programme

Personnel who are not considered competent to operate a truck shall operate the truck only as part of the operator training programme. This training shall be conducted under the direct supervision of a trainer.

The operator training programme shall be based on user policies, industry standards, local regulations and policies, operating conditions and the manufacturer's instructions.

NOTE Information on operator training is available from sources including users, truck manufacturers, government agencies dealing with employee safety, trade organizations of truck users, public and private organizations and safety consultants.

The training programme shall emphasize safe and proper operation that avoids injury to the operator and others and prevents property damage. The training program shall include the following items.

a) Information about the truck(s) the trainee will operate:

   1) characteristics of this type of truck, including possible variations between these trucks and other equipment (e.g. mobile elevating work platforms, cranes) in the workplace;

   2) specifications with respect to other rough-terrain trucks (e.g. non-slewing trucks);

   3) significance of information plates, load charts (maximum and minimum extension of the outriggers, aligned or non-aligned positions, slewing range), warnings and instructions affixed to the truck;

4) operating and safety instructions in the truck's operator's manual;

5) instructions for inspection and maintenance to be performed by the operator;

6) engine operation;

7) type of drive system and its characteristics;

8) methods of steering and manoeuvring in aligned position and for slewing angles greater than 90°;

9) braking methods and characteristics, with and without loads;

10) visibility, with and without loads;

11) load charts, how to read and comprehend them and the limitations of the load chart due to the mass and load centres and slewing positions;

12) explanation of the stability characteristics (combination of longitudinal and lateral configuration) in different conditions affected by load handling (raising, lowering and slewing), stabilizing device configuration and slewing position, operation/manoeuvring without loads, height, attachments, grade/ramps, centre of gravity of the load and centre of gravity of the truck, combined load centre of gravity, counterbalance principle, use of suspension system;

13) controls and instrumentation, including their location, identification, function and method of operation for different slewing configurations (forward aligned or non-aligned positions greater than 90°), and the identification of symbols;

14) load-handling capabilities and proper use of forks and other load bearing or non-load carrying attachments;

15) refuelling and battery charging;

16) guards and protective devices for the specific type of truck;

17) how to use stabilizing devices, chassis levelling and other stability-related functions, and examples of improper operation and the risks associated with them;

18) how to correctly use the operator restraints, e.g. seat belt, and other safety devices;

19) basic steps to be taken in the event of a tip-over, e.g. bracing for impact;

20) wheel loadings when loaded and unloaded;

21) correct entering and exiting the truck in normal operation;

22) normal access/egress configuration and the need to always maintain three points of contact, i.e. one hand and two feet or two hands and one foot;

23) types of attachments and their applications/limitations;

24) other characteristics, if any, of the particular truck;

25) use of upper slewing structure locking pin for transportation.

b) Operation and worksite-related topics:

1) surface conditions on which the truck is to be operated, loaded and unloaded, e.g. floor and ground conditions, ground pressure, ramps and inclines, trailers;

2) load handling at height and at ground level;

3) levelling of the truck prior to picking and placing loads;

4) traffic (e.g. co-workers/bystanders, vehicles, other equipment in areas in which the truck is to be used);

5) confined-area operations;

6) potentially hazardous locations where the truck will be operated;

7) ramps and gradients and how the stability of the truck could be affected by them;

8) enclosed environments and other areas where insufficient ventilation could result in a concentration of carbon monoxide gas from the engine exhaust;

9) other unique or potentially hazardous environmental conditions at the worksite that could affect other workers and the safe operation of the truck;

10) load handling in a stationary position;

11) displacement of the unladen truck to the appropriate location, stabilization, loading, chassis levelling, slewing, lifting, extending, retracting, lowering;

12) load picking and carrying in accordance with specific manufacturer's instructions;

13) emergency situations, (e.g. operation with safety devices bypassed, emergency stop), leaving the truck, accessing for first aid purposes;

14) remote-controlled operations;

15) overhead obstacles.

c) Practice:

1) explanation of the truck components and safety devices by following the information for use;

2) maintenance and daily checks given in the operator's manual and regulated periodical inspections;

3) driving of the truck in a designated test area;

4) operation of the truck to highlight appropriate manoeuvres to be performed with the truck laden and unladen (e.g. chassis levelling, load handling in a stationary position etc.).

4.7.2 Testing, retraining and enforcement

4.7.2.1 Testing

During training, performance and oral and/or written tests shall be given by the examiner to measure the skill and knowledge of the trainee in meeting the requirements of the operator training programme based on this part of ISO 11525. Examiners shall establish a pass/fail requirement for such tests. The user shall verify that the testing has been satisfactorily performed.

Following the completion of instruction and practice, all trainees shall be evaluated.

The evaluation shall be conducted on the specific work tasks and shall include the following items:

a) preoperational inspection;

b) function test;

c) start-up;

d) travelling, with and without a load (including co-worker/bystander safety);

e) load handling in a stationary position;

f) load selection and security;

g) load pickup and placement;

h) stacking/de-stacking;

i) handling specific to docks, carry vehicles and rail cars;

j) driving the unladen truck on ramps and grades;

k) proper use of the truck's safety features;

l) shutdown;

m) refuelling/recharging;

n) operational maintenance.

Records shall be retained in accordance with 4.7.2.4.

4.7.2.2 Retraining

Operators shall be retrained when new equipment is introduced, existing equipment is modified, operating conditions change, current training expires or an operator's performance is deemed unsatisfactory by the user.

Maximum period should not exceed five years before an operator is retrained.

The user shall determine the extent of the operator retraining, as well as the need for retraining, taking into consideration regional or local requirements.

4.7.2.3 Enforcement

The user shall be responsible for enforcing the safe use of the truck according to the provisions of this part of ISO 11525.

4.7.2.4 Record keeping

Records of the person or persons trained in the operation of the truck shall be retained for at least the period of time for which the training is valid. In addition:

— the successful trainee shall be furnished with proof of training, verifying compliance with the operator training program based on this part of ISO 11525 and other national regulation(s);

— the records shall reflect the period of time when the training has not expired;

— the records shall show the name of the trainee;

— the records shall include the name of the entity providing training or retraining, the name of trainer(s) and examiner(s), clear identification of the truck type(s) and attachment(s) covered by training, and the date of training;

— when requested, records regarding proof of training shall be made available.

4.8 Inspection and maintenance

4.8.1 General

The inspection and maintenance of trucks shall be performed in accordance with the manufacturer's and user's recommendations, national regulations and

a) a planned system for scheduled inspection, lubrication, maintenance and adjustment (as required), and

b) that only competent and authorized persons are permitted to maintain, repair, rebuild, adjust and inspect trucks, in accordance with the manufacturer's recommendations.

The user shall ensure that inspections and maintenance operations are conducted in an authorized area where safe clearances exist.

4.8.2 Preparation for inspection or repair

Prior to operating the truck, the operator shall ensure that truck periodical inspection register is complete and report any discrepancies or omissions to the user.

In preparation for, and prior to, starting the inspection or repair of a truck:

— the truck shall be parked on flat level compact ground;

— set the direction control in neutral, apply the parking brake, switch off the engine and remove the device (e.g. key, key pad, magnetic card) that prevents starting without the use of such device;

— wheel chocks or other means shall be applied to ensure the truck remains stationary;

— manufacturer-approved methods/devices as outlined in the operator's manual shall be implemented to prevent unintentional movement of the truck/components before working on or around it;

— the possibility of unintentional fuel escape shall be eliminated before any part of the fuel system is disconnected;

— the battery shall be disconnected before working on the electrical system;

— the possibility of an unintentional stored energy release, e.g. from the accumulator or hydraulic system, shall be eliminated;

— appropriate personal protective equipment shall be used.

4.8.3 Performance checks

Prior to conducting the performance checks, the user shall ensure that the pre-operation inspection has been performed satisfactorily per the manufacturer's instructions.

The user shall ensure that performance checks are conducted in an authorized area where safe clearances exist.

Before starting the performance check, the operator shall

a) be in the normal operating position using an operator restraint (e.g. seat belt),

b) disengage the clutch, if the truck is so equipped,

c) apply service and parking brakes,

d) place directional control(s) in neutral, and

e) start the engine or power system.

Check that all control systems and safety devices, e.g. load-handling means, steering, brakes, are functioning in accordance with the manufacturer's instructions.

Before exiting the truck, the operator shall

a) stop the truck,

b) fully lower the load-handling means and set the truck in the normal access/egress position,

c) place directional control(s) in neutral,

d) apply the parking brake,

e) shut down the engine or power system, and

f) remove the key, if so equipped, or, where other means, such as a key pad, are used to prevent the truck's use by unauthorized personnel, turn off the power using those means.

4.8.4 Inspection and maintenance precautions

The following precautions shall be taken by the user when inspection and maintenance is performed:

— Avoid fire hazards and ensure that appropriate fire protection equipment is present in the work area. Do not use an open flame to check fluid levels or for leakage of fuel, battery electrolyte or other flammable liquids. Do not use open containers of fuel or flammable cleaning fluids for cleaning parts.

— Properly ventilate the work area, including engine exhaust fumes.

— Keep the work area clean and dry.

— Do not make repairs or adjustments (e.g. welding of structures) unless specifically authorized to do so in accordance with 4.3.

— When refuelling, smoking in the area shall not be permitted, the engine shall be stopped and the operator shall not be in the truck.

— Spillage of oil or fuel shall be cleaned appropriately.

— Replace the oil and fuel tank caps before restarting the engine.

— Avoid other potential hazards associated with the inspection and maintenance of the truck not addressed in this part of ISO 11525 or the operator's manual.

— Be aware of national and/or local environmental regulations for managing waste oils, filters or any other source of environmental pollution.

4.8.5 Inspection and maintenance requirements

The user shall ensure that

a) brakes, steering mechanisms, control mechanisms, warning devices, guards and safety devices, lift, reaching, levelling mechanisms, slewing upper structure brake, axle stops, and frame members are carefully inspected and maintained in a safe operating condition in accordance with 4.8.1 a),

b) if the truck and components are designed and approved for hazardous area operation, they receive special attention so that the maintenance performed achieves the original, approved, safe operating conditions,

c) fuel systems are inspected for leaks, damage and deterioration,

d) hydraulic systems are inspected and maintained in conformance with the manufacturer's recommendations, and hydraulic cylinders, valves and other hydraulic system components are

checked to ensure that creep or leakage has not developed to the extent that would create a hazard or exceed the corresponding values given in ISO 10896-2,

e) truck safety, capacity, operation and maintenance information plates, tags and labels are maintained in a legible condition,

f) the truck is kept in a clean condition so as to minimize fire hazards and facilitate detection of loose or damaged parts,

g) replacement parts, including tyres, are only original or approved by the truck manufacturer,

h) if any repairs are necessary, action is taken to prevent use of the truck until repairs have been completed,

i) industry safety practices are followed when fitting or removing tyres from rims, pneumatic tyres are completely deflated prior to their removal from rims, and a safety cage or restraining device is used while inflating tyres,

j) approved load-handling attachments are inspected, repaired or replaced in accordance with the manufacturer's instructions,

k) forks arms are inspected, repaired or replaced in accordance with ISO 5057,

l) all fluids (e.g. mechanism lubricant, hydraulic oils, brake fluid) have been checked and are at appropriate level(s), and

m) records, including the name of the person responsible and date of the periodical inspection, and/or maintenance are kept.

4.9 Hazardous environments

The user shall ensure that the truck selected is appropriate for the environment in which it is to be used.

To operate in proximity of overhead electric lines, the user shall inform the operator about the minimum safety distance and all the necessary precautions to be taken according to the local authorities requirements.

NOTE Specific national or local regulations apply for operation in potentially explosive atmosphere or underground.

5 Operating safety rules and precautions

5.1 Operator's responsibility for safety

The operator is responsible for the safe operation of the truck, inspection and functional tests of the truck as outlined in Clause 5.

Before operating any truck, the operator shall have read and be familiar with the operator's manual(s), and any additional safety manual(s) provided by the manufacturer and user, for the particular truck being operated.

Trucks can be dangerous if not used properly. The operator shall follow safe working practices and shall be aware of hazardous conditions, utilizing all means, including those provided by the user, to protect himself/herself, other personnel in the area, the truck, and the local environment.

The operator shall develop safe working practices and shall be aware of hazardous conditions, utilizing all means, including those provided by the user, to protect himself/herself, other personnel, the truck, the load and the local environment.

The operator shall be familiar with the operation, identification and functions of all controls and instruments for various slewing configurations (e.g. forward aligned, non-aligned positions greater than 90°) before operating the truck.

The operator shall understand the load charts, affixed to the truck, for various slewing configurations, on stabilizers/outriggers (maximum and minimum extension) and on tyres. This shall include any attachments that are used.

The operator shall know the weight to be lifted and the load centre distance of the load.

The operator shall be aware of any overhead obstructions (e.g. overhead power cables) prior to operation and maintain a safe distance.

5.2 Visual inspection and functional tests

Before its use each day or at the beginning of each shift, the truck shall be given a visual inspection and functional tests, including

— operating and emergency controls,

— safety devices,

— lights (if so equipped),

— brakes,

— lift and levelling systems, load handling means, chains, wire ropes and limit switches,

— personal protective equipment (PPE),

— fork arms and the attachment means,

— air, hydraulic and fuel systems,

— cables and wiring,

— loose, damaged or missing parts,

— tyres and wheels,

— instructions, warnings and control markings,

— operator's manual(s),

— structural components, such as stabilizing devices,

— any attachments to be used,

— load charts are visible and legible,

— hydraulic oil and other fluids level,

— optional equipment, e.g. remote control, and

— other items specified by the manufacturer.

If the truck is found to be in need of repair or is unsafe in any way, or if it contributes to an unsafe condition, the matter shall be reported immediately to the users designated authority and the truck shall not be operated until it has been restored to a safe operating condition.

Records should be kept of the visual inspection and functional tests.

5.3 General operating instructions

The operator shall enter and exit the normal operating position with the truck in normal access/egress configuration by using the appropriate means of access providing three points of contact.

The operator shall

a) before starting to operate the truck,

   1) be in the normal operating position, and using an operator restraint, e.g. seat belt,

   2) disengage the clutch, if so equipped,

   3) apply service and parking brakes,

   4) place directional control in neutral, and

   5) start the engine or power system;

b) not start or operate the truck, or any of its functions or attachments, from any part of the truck (e.g. the lower chassis upper surface) or any place other than the normal operating or the remote-control position;

c) never put any part of the body, including hands and feet,

   1) outside the operator's compartment,

   2) into the load-handling structure,

   3) between the load-handling structure, the stabilizers, the slewing upper structure and the truck, or

   4) within the reach mechanism or attachments of the truck;

d) understand the fundamental characteristics (see 4.1) and the limitations of the truck and always operate the truck in a safe manner;

e) not drive a truck directly up to anyone or use attachments differently from those purposes specified in the manufacturer's instructions;

f) safeguard co-workers/bystanders at all times, and exercise particular care during reversing and other operations (especially when not in the travel position) during which they could step into the path of travel of the truck;

g) not allow anyone to stand or pass under the elevated load-handling structure of the truck, whether empty or loaded;

h) not permit anyone to stand or sit on any part of the truck (e.g. the lower chassis upper surface) or passengers to ride on the truck, unless a designated passenger seat has been provided by the manufacturer, and, if the passenger seat is occupied, operate the truck in a manner that ensures safety of the passenger, who shall

   1) remain seated with seat belt fastened at all times except when entering and exiting,

   2) keep all parts of his/her body, including hands and feet, inside the passenger compartment,

   3) keep clear of, and make no contact with, the operating controls of the truck, and

   4) not exit until the truck is properly shut down;

i) check clearance carefully before driving under obstructions, e.g. electrical lines, bridges;

j) check for underground utility services before using ground-engaging attachments;

k) take reasonable steps to minimize the environmental impact of using the truck;

l) take into account the effects of weather (e.g. wind, rain and snow) on the safe operation of the truck;

m) before leaving the normal operating position,

   1) bring the truck's travelling (see 5.4) to a complete stop,

   2) place directional control in neutral,

   3) apply the parking brake,

   4) bring the truck to normal access/egress position for exiting and entering and position forks or other attachments flat on the ground, and

   5) in addition, when leaving the truck unattended (see Notes, below), stop the engine and remove the key (if so equipped) or, in the case where other means such as a key pad is used to prevent use of a truck by unauthorized personnel, use this means to turn off the power;

n) maintain a safe distance from the edge of ramps, platforms and other working surfaces;

o) in areas classified as potentially hazardous, use only trucks approved for use in those areas;

p) report all accidents involving personnel, building structures and equipment to the supervisor or as directed;

q) not block access to fire exits, stairways or fire equipment, or park closer than 1,8 m to a railway line and maintain safe distances from drop-offs (e.g. excavations, ditch etc.);

r) maintain the appropriate minimum safe distance from energized power lines as defined by local, federal or national regulations.

NOTE 1 A truck is defined as attended when the operator is less than 7 m from the normal operating position, which remains in the operator's view.

NOTE 2 A truck is defined as unattended when the operator is 7 m or more from the normal operating position, which remains in the operator's view, or whenever the operator leaves the truck and it is not in the operator's view.

If the truck is found to be in a condition that is unsafe in any way, this shall be reported immediately to the user and the truck shall not be operated until it has been restored to safe operating condition by a competent person.

5.4 Travelling

The operator shall

a) set the truck in the forward aligned position, with only forward-axle steering and apply boom and slewing control devices disabling the upper structure locking system before travel on public roads or when moving between worksites,

b) not engage the axle oscillation/suspension lock or differential lock on trucks so equipped, when driving on roads or at high speeds, or when turning, as, if locked when turning, there could be loss of steering control,

c) comply with the applicable traffic regulations,

d) operate the unladen truck under all travel conditions at a speed that will permit it to be brought to a stop in a safe manner,

e) maintain a safe distance from personnel, vehicles and other equipment,

f) yield the right-of-way to co-workers/bystanders and emergency vehicles such as ambulances and fire trucks,

g) not pass other equipment or vehicles travelling in the same direction at intersections, blind spots, or at other potentially dangerous locations,

h) slow down and sound the audible warning device(s) at intersections and locations where vision is obstructed,

i) keep a clear view of the path of travel,

j) tilt back and raise the load-handling means to provide ground clearance and ensure proper visibility,

k) make starts, stops, turns and direction changes in a smooth manner so as not to overturn the truck,

l) not indulge in stunt driving or "horseplay",

m) drive loaded trucks when ascending or descending gradients in excess of 5 % only if the manufacturer has allowed for it,

n) ascend and descend ramps and gradients slowly and cautiously,

o) travel straight up and down gradients and avoid turning across gradients,

p) cross railroad tracks slowly and cautiously,

q) on a side slope, never rotate the upper structure,

r) avoid running over loose objects on the roadway surface,

s) reduce speed to a safe level when negotiating turns, turning the steering wheel in a smooth, sweeping motion and, except when manoeuvring at very low speeds, at a moderate, even rate,

t) before travelling on public roads, set the truck in the forward aligned position and lock the rotating upper structure with the appropriate locking means,

u) travel with the rotating upper structure at a slewing angle not greater than 90° from either side of the longitudinal axis of the truck, and

v) ensure that the stabilizers are secured in the stowed position.

5.5 Picking and placing loads

The operator shall

a) before starting to pick or place a load,

   1) know or determine the weight of the load and the position of its load centre,

   2) verify the capacity of the surface before placing a load on it,

   3) ensure that the frame is levelled both longitudinally and laterally within the manufacturer's requirements by using stabilizing devices and/or frame levelling before raising the boom or rotating the upper structure, with or without a load and/or with the aid of an assistant,

   4) follow the manufacturer's instructions for operating stabilizer controls, if so equipped, as improper use of these controls could cause the truck to overturn,

   5) when using stabilizing devices, ensure that they are applied in accordance with the operating instructions,

   6) when using stabilizing devices, ensure that the landing surface is firm and capable of supporting the truck and the load. Check maximum ground pressure and, if needed, use means (e.g. additional stabilizer plates) to ensure an adequate distribution of the load, and

7) if fitted, engage oscillating axle locking systems/devices per the manufacturer's instructions;

b) when picking or placing a load,

1) never lift a load with one fork,

2) place loads only on level and even surfaces,

3) never manoeuvre the truck while the forks are elevated above the transport position as defined in the operator's manual(s),

4) use a load backrest extension whenever necessary to prevent a load, or part of it, from falling toward the operator,

5) reposition the truck and/or use lateral (frame) levelling to position an elevated load only after lowering the load, in accordance with manufacturer instructions,

6) handle only stable and properly arranged loads,

7) operate with extra caution when handling off-centre loads that cannot be centred,

8) handle only loads within the capacity of the truck and attachments, according to the appropriate load chart(s) for the actual configuration of the truck (slewing angle on tyres or stabilizing devices),

9) use special care when manoeuvring after placing a load,

10) ensure that the fork arms are reasonably horizontal and the truck is on a substantially firm smooth, level and stable surface,

11) completely engage the load with the load engaging means, with a fork length that should be at least two thirds of load length,

12) not operate the frame levelling feature, if fitted, when the boom is elevated above the position recommended by the manufacturer,

13) be aware that when the boom is extended, the boom tip speed will be increased when slewing, so reduce slewing speed accordingly,

14) not activate controls which adversely affect stability, and

15) pay attention not to hit stabilizing devices when the boom is fully lowered and retracted.

5.6 Using attachments

When attachments are used to handle loads, the operator shall

a) ensure that the attachment is properly secured and all locking devices are engaged,

b) use care when securing, manipulating, positioning and transporting the load,

c) operate a truck equipped with an attachment as a partially loaded truck when not handling a load,

d) carefully tilt the load rearward to stabilize the load, and use extra caution when tilting high or segmented loads,

e) use extreme care when tilting the load forward or rearward, particularly when stacking at height, and do not tilt forward with the load-handling means elevated, except to pick up or place a load over a rack or stack,

f) when stacking, use only enough rearward tilt to stabilize the load,

g) balance the load when stacking and offset only to pick up or place a load, and

h) ensure that the load charts for the attachment being used are visible and legible.

Bibliography

[1] ISO 10896-1, *Rough-terrain trucks — Safety requirements and verification — Part 1: Variable-reach trucks*

[2] ISO 11525-4, *Rough-terrain trucks — User requirements — Part 4: Additional requirements for variable-reach trucks handling freely suspended loads*

[3] ISO 20297[1)], *Industrial trucks — Lorry-mounted trucks*

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