Excerpts from ANSI/ITSDF B56.1a-2018 Safety Standard for Low Lift and High Lift Trucks

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4.5 Safety Guards

4.5.1 Overhead Guards

4.5.1.1 High lift rider trucks, including order picker trucks, shall be fitted with an overhead guard manufactured in accordance with para. 7.30.

4.5.1.2 An overhead guard is intended to offer protection to the operator from falling objects but cannot protect against every possible impact. Therefore, it should not be considered a substitute for good judgment and care in loading, handling, storage, etc.

4.5.1.3 Under certain unusual operating conditions, a stronger guard, or one having openings of smaller size, may be specified by the user working with the truck manufacturer.

4.5.1.4 Exceptions

(a) Where overhead obstructions limit the overall lowered height of the truck, normal overhead guard height and the vertical clearance under the guard may be reduced to permit operation with a guard.

(b) The user may operate the truck without the overhead guard, provided all of the following conditions are met:

(1) vertical movement of the lifting mechanism is restricted to 1 825 mm (72 in.) or less from the ground

(2) the truck will operate only in an area where

(a) the bottom of the top tiered load is not higher than 1 825 mm (72 in.) and the top is not more than 3 050 mm (120 in.) from the ground when tiered

(b) only stable (preferably interlocked, unitized, or containerized) loads are handled

(c) there is protection against falling objects from adjacent high stack areas

4.17 Elevating Personnel

4.17.1 Only operator-up high lift trucks have been designed to lift personnel. On these trucks the requirements of paragraph 4.17.2 shall be met for the protection of personnel. If a work platform is used on trucks designed and intended for handling materials, the requirements of paras. 4.17.2 and 4.17.3 shall be met for the protection of personnel.

4.17.2 Whenever a truck is used to elevate personnel, the following precautions for the protection of personnel shall be taken:

(a) Comply with the design requirements in para. 7.38 of this Standard.

(b) Provide protection for personnel in their normal working position on the work platform from moving parts of the truck that represent a hazard.

(c) Make sure required fall restraint means, such as guardrails or personal fall protection systems, are in place and properly used (see 7.38.1(d)(1). For personal fall protection system configurations, see Table 1.

(d) Be certain that the lifting mechanism is operating smoothly throughout its entire lift height, both empty and loaded, and that all lift limiting devices and latches, if provided, are functional.

(e) Provide overhead protection as indicated to be necessary by the operating conditions.

(f) All components of the personal fall protection system shall be inspected and maintained in accordance with the schedule and requirements found in Section 6 of ANSI/ASSE Z359.11-2014 Safety Requirements for Full Body Harnesses, ANSI/ASSE Z359.13-2013 Personal Energy Absorbers and Energy Absorbing Lanyards, ANSI/ASSE Z359.14-2014 Safety Requirements for Self-Retracting Devises for Personal Fall Arrest and Rescue Systems.

(g) All components of the fall protection system shall be rated for the operator’s weight.

[Table 1(a) Personal Fall Protection System Configurations (pounds)]

[Table 1(b) Personal Fall Protection System Configurations (kilograms)]

4.17.3 Whenever a truck is equipped with a work platform (does not include operator-up high lift trucks), precautions specified in para. 4.17.2 shall be taken and the following additional precautions shall be taken for the protection of personnel:

(a) Provide a work platform that complies with the design requirements in para. 7.38.3.

(b) The work platform attachment means are applied and the work platform is securely attached to the lifting carriage or forks.

(c) When the lifting carriage and/or forks are supporting the work platform used to elevate personnel, the lifting carriage and/or forks are secured to prevent them from pivoting upward.

(d) The mast is vertical – do not operate on a side slope.

(e) The work platform is horizontal and centered and not tilted forward or rearward when elevated.

(f) The truck has a firm and level footing.

(g) Place all travel controls in neutral and set parking brake.

(h) Before elevating personnel, mark area with cones or other devices to warn of work by elevated personnel.

(i) Lift and lower personnel smoothly, with caution, and only at their request.

(j) Avoid overhead obstructions and electric wires.

(k) Keep hands and feet clear of controls other than those in use.

(l) Move truck and/or work platform slowly, only for minor adjustments in horizontal positioning when personnel are on the work platform, and only at their request.

(m) On trucks equipped with rotators, mechanically secure the rotator to prevent movement.

(n) Have a trained operator in position to control the truck, or available to operate controls. When the operator is not in the operating position, engage the parking brake and block the wheels.

(o) The combined weight of the work platform, load, and personnel is not to exceed one-half of the capacity as indicated on the nameplate of the truck on which the work platform is used.

(p) Personnel are to remain on the platform floor. Use of railings, planks, ladders, etc., on the work platform for purpose of achieving additional reach or height is prohibited.

(q) Personnel and equipment on the work platform are not to exceed the available space.

(r) Lower work platform to floor level for personnel to enter and exit. Do not climb on any part of the truck in attempting to enter and exit.

7.30 Overhead Guard for High Lift Rider Powered Industrial Trucks

7.30.1 Design Requirements

(a) The overhead guard and its mounting shall be capable of withstanding the impact of a 45 kg hardwood covered cube (or equivalent) under the conditions specified in para. 7.30.2(b).

(b) The overhead guard and its mounting shall be capable of withstanding an impact test as specified in

Table 3. Details of conducting the test and measuring the deformation are covered in para. 7.30.2(c).

(c) Openings in the top of the overhead guard shall not exceed 150 mm in one of the two dimensions, width or length.

(d) The overhead guard shall extend over the operator under all normal operating circumstances of truck operation except as provided for below. For overhead guards fixed to the mast, this also applies to all positions of the mast. The overhead guard shall not extend beyond the plan view outline of the truck.

The control levers in their neutral position, unprotected pedals, and the steering wheel may extend in the direction of the mast outside of the plan view of the overhead guard up to a distance of 150 mm. Control levers may extend to either side of the truck outside the plan view of the overhead guard, up to a maximum of 150 mm providing they do not extend outside the plan view of the truck at any point of their range of operation. Such coverage is not required of the parking brake control.

Feet and legs extending beyond the overhead guard will be considered protected if under cover of a cowl. Any portion of them without such cover shall be limited to a maximum exposure of 150 mm measured in the plan view.

(e) For sit-down rider trucks a vertical clearance of at least 890 mm should be maintained from the Seat Index Point or H-Point of the truck, as determined according to ISO 5353, to the underside of the section of the guard under which the operator’s head is located in his normal position during truck operation.

(f) For stand-up trucks, a vertical clearance of at least 1 880 mm should be maintained from the platform where the operator stands to the underside of the section of the guard under which the operator’s head is located in his normal position during truck operation.

(g) High lift motorized hand trucks do not require overhead guards.

(h) When requested by the user, the manufacturers may reduce the normal overhead guard height and the vertical clearance for the operator’s head under the guard to permit truck operation by the user with a guard in areas where overhead obstructions limit the overall lowered height of the truck.

7.38 Platforms: Elevating

7.38.1 Platforms used for elevating personnel shall have:

(a) a slip resistant floor surface.

(b) a minimum floor space of 450 mm x 450 mm for each platform occupant.

(c) protection for personnel in their normal working position on the platform from moving parts of the truck that represent a hazard.

(d) fall restraint means such as a guard rail or a personal fall protection system, whenever the platform can be elevated to a height greater than 1 200 mm.

(1) A guard rail shall have a height above the platform floor of not less than 915 mm or more than 1065

mm around its upper periphery and include a midrail. To provide an access opening, the guard rail may be hinged or removable, or chains may be used if proper positioning is easily accomplished and a secured condition is discernible. Guard rails and access opening guards shall be capable of withstanding a concentrated horizontal force of 890 N applied at the point of least resistance without permanent deformation.

(2) Personal fall protection systems are intended to limit the distance an operator can fall from the operator platform and limit the forces imposed on an operator's body when the fall is arrested. Personal fall protection system configurations are based on the operator's weight. See Table 1 for personal fall protection system configurations.

(a) The complete fall protection system shall consist of:

(1) Components, excluding anchorages, shall meet the applicable requirements as stated in clauses 3 and 4 of ANSI/ASSE Z359.11-2014 Safety Requirements for Full Body Harnesses, ANSI/ASSE Z359.13-2013 Personal Energy Absorbers and Energy Absorbing Lanyards, ANSI/ASSE Z359.14-2014 Safety Requirements for Self-Retracting Devises for Personal Fall Arrest and Rescue Systems.

(2) Anchorage(s) shall be capable of withstanding three consecutive drops of a 113 kg test weight (multiplied by the maximum number of personal fall protection systems that may be attached) free falling a distance of 1825 mm without allowing the test weight to fall free to the ground.

(b) The fall protection system shall allow personnel freedom of movement in their working area.

(c) The anchorage(s) of the fall protection system shall be located on an overhead member of the platform located near the longitudinal center of the platform.

(d) Personal fall protection systems shall be so arranged as not to cause a trip hazard for the operator.

(3) Supplementary platforms

(a) When a supplementary platform is utilized, it shall be provided with guard rails or other restraining means. The work area may be provided with a fall protection system configuration in lieu of, or in addition to, guard rails.

(b) When the supplementary platform is not utilized, a restraining means such as a personal fall protection system configuration or guard rails, chains, cable shall be provided on the open (load) side of the operator's platform.

(e) when controls are supplied for use on the elevating platform, they shall be readily accessible to the operator and protected from damage and inadvertent actuation. Provision to shut off power to the truck shall be provided. An emergency lowering means operable from the ground shall be provided for overriding the controls on the platform.

(f) hydraulic or pneumatic hoisting systems shall include means to prevent unintended descent in excess of 0.6 m/s in event of a hose failure.

(g) a structural safety factor of not less than 3 to 1 based on the minimum yield strength of the materials used for all load supporting structural elements and platform attachment means.

7.38.2 Operator platforms for operator-up, high lift trucks shall comply with para. 7.38.1 and shall have (a) sufficient strength to withstand a compression load equal to 2.5 times the weight of the loaded truck applied along the longitudinal axis of the truck with the outermost projection of the operator platform against a flat vertical surface

(b) an overhead guard manufactured in accordance with para. 7.30

7.38.3 Work platforms (does not include operator platforms) shall comply with para. 7.38.1 and shall have

(a) a 100 mm minimum height toe plate on all sides of the work platform. The toe plate may be omitted at the access opening(s).

(b) the floor of the work platform located not more than 200 mm above the upper face of the supporting truck fork blade.

(c) means to securely attach the work platform to the lifting carriage or forks, and to prevent the lifting carriage or forks from pivoting upward.

(d) means to correctly locate the work platform centered laterally on the truck.

(e) floor dimensions that neither exceed two times the load center distance listed on the truck nameplate, measured parallel to the longitudinal center plane of the truck, nor have a width greater than the overall width of the truck (measured across the load bearing tires) plus 250 mm on either side.

(f) when controls for lift and lower are provided, means to render inoperative all operating controls other than those on the work platform when the controls on the elevating work platform have been selected for use. Only one location of controls shall be capable of being operated at one time [with the exception of lowering means noted in para. 7.38.1(e)].

(g) an overhead guard manufactured in accordance with para. 7.30, when requested by the user.

(h) the combined weight of the work platform, load, and personnel not to exceed one-half of the capacity as indicated on the nameplate of the truck on which the work platform is used.

(i) the following information prominently indicated on the work platform:

(1) maximum load including personnel and equipment

(2) weight of empty work platform

(3) minimum capacity of truck on which the work platform can be used

7.38.4 Trucks used for elevating personnel shall have:

(a) When controls are supplied for use on the elevating work platform, they shall be readily accessible to the operator and protected from damage and inadvertent actuation. Provision to shut off power to the truck shall be provided. An emergency lowering means operable from the ground shall be provided for overriding the controls on the work platform.

(b) Hydraulic or pneumatic hoisting systems shall include means to prevent unintended descent in excess of 0.6 m/s in event of a hose failure.