

# EXCERPTS THAT APPLY TO FORKLIFT WORK PLATFORMS

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## EXCERPTS FROM OSHA 29 CFR 1926.602

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### 1926.602(c)(1)(vi)

All industrial trucks in use shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation, as defined in American National Standards Institute B56.1.

## EXCERPTS FROM ANSI/ITSDF B56.1-2012

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### 4.1 Introduction

#### 4.1.1

Part II contains requirements for the users of powered industrial trucks. Included are requirements for operator qualifications and training, operating safety rules, and maintenance practices.

### 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. 7.37 of this Standard.
- (b) Provide protection for personnel in their normal working position on the platform from moving parts of the truck that represent a hazard.
- (c) Make sure required fall restraint means, such as guardrails and/or personal fall protection systems, are in place and properly used (see 7.37.1(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 Z359.1-2007 Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components.

#### 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 platform that complies with the design requirements in para. 7.37.3.
- (b) The platform attachment means are applied and the platform is securely attached to the lifting carriage or forks.

- (c) When the lifting carriage and/or forks are supporting the 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 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 platform slowly, only for minor adjustments in horizontal positioning when personnel are on the 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 platform, load, and personnel is not to exceed one-half of the capacity as indicated on the nameplate of the truck on which the platform is used.
- (p) Personnel are to remain on the platform floor. Use of railings, planks, ladders, etc., on the platform for purpose of achieving additional reach or height is prohibited.
- (q) Personnel and equipment on the platform are not to exceed the available space.
- (r) Lower 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.

### 7.37 Platforms: Elevating

#### 7.37.1

Platforms used for elevating personnel shall have

- (a) a slip resistant floor surface.
- (b) a minimum floor space of 450 mm x 450 mm (18 in x 18 in) 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 and/or a personal fall protection system, whenever the platform can be elevated to a height greater than 1200 mm (47.25 in).
  - (1) A guard rail shall have a height above the platform floor of not less than 915 mm (36 in) or more than 1065 mm (42 in) 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 (200 lb) 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 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 body belts and anchorages, shall meet the applicable requirements as stated in clauses 3 and 4 of ANSI/ASSE Z359.1-2007

Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components

(2) Body belts shall have a width of at least 44mm and shall meet the applicable requirements as stated in clauses 3 and 7 in ANSI/ASSE A10.32-2004 Standard for Personal Fall Protection Used in Construction and Demolition Operations.

(3) Anchorage(s) shall be capable of withstanding three consecutive drops of a 113 kg (250 lb) test weight (multiplied by the maximum number of personal fall protection systems that may be attached) free falling a distance of 1825 mm (6 ft) 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.

### 7.37.2

Operator platforms for operator-up, high lift trucks shall comply with para. 7.37.1 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 platform against a flat vertical surface

(b) an overhead guard manufactured in accordance with para. 7.29

### 7.37.3

Work platforms (does not include operator platforms) shall comply with para. 7.37.1 and shall have

(a) a 100 mm minimum (4 in) height toe plate on all sides of the platform. The toe plate may be omitted at the access opening(s).

(b) the floor of the platform located not more than 200 mm (8 in) above the upper face of the supporting truck fork blade.

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

(d) means to correctly locate the 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 (10 in) 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 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. 7.37.1(e)].

(g) an overhead guard manufactured in accordance with para. 7.29, when requested by the user.

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

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

(1) maximum load including personnel and equipment

(2) weight of empty platform

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

### 7.37.4

Trucks used for elevating personnel shall have

(a) 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.

(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.

## EXCERPTS FROM ANSI/ITSDF B56.6-2011

### 5.15 Elevating Personnel

#### 5.15.1

A rough terrain forklift truck shall not be used to lift people unless there is no other practical option. If a rough terrain forklift truck must be used to lift people, the following precautions for the protection of personnel shall be taken:

(a) provide a personnel platform which complies with the design requirements listed in Part III of this Standard;

(b) be certain that the platform is securely attached to the lifting carriage and forks;

(c) be certain that the lifting carriage and forks are secured to prevent them from pivoting upward;

(d) on trucks equipped with rotators, deactivate the rotation;

(e) provide protection for personnel in their normal working position on the platform from moving parts of the rough terrain forklift truck that represents a hazard;

(f) provide overhead protection as indicated to be necessary by the operating conditions;

(g) be certain that the lifting mechanism is operating smoothly throughout its entire lift range, both empty and loaded [as described in para. 5.15.1(t)], and that all lift limiting devices and latches, if provided, are functional;

(h) be certain that the mast or boom travel is vertical – do not operate on a side slope unless the rough terrain forklift truck is leveled;

(i) be certain that the platform is horizontal and never tilt platform forward or rearward when elevated;

(j) be certain that the rough terrain forklift truck has a firm footing;

(k) be certain that required restraining means such as railings, chains, cable, body belt(s) with lanyard(s), etc., are in place and properly used;

(l) place rough terrain forklift truck control(s) in neutral and set parking brake;

(m) before elevating personnel, area shall be marked to warn of work by elevated personnel;

(n) be certain that the path of platform travel is clear of hazards, e.g., storage racks, scaffolds, overhead obstructions, and electrical wires;

(o) keep hands and feet clear of controls other than those in use;

(p) lift and lower personnel smoothly, with caution, and only at their request;

- (q) always lower the platform if you must move the rough terrain forklift truck for adjustments in positioning;
- (r) alert elevated personnel before moving the platform. Then move the platform smoothly and with caution.
- (s) a trained operator shall be in position to control the rough terrain forklift truck, or available to operate controls if the platform is not equipped with controls. When the operator is not in the operating position, block the truck wheels and apply the parking brake with all travel controls in neutral.
- (t) the combined mass (weight) of the platform, load, and personnel shall not exceed one-third of the capacity at the related load center position as indicated on the information plate(s) of the rough terrain forklift truck on which the platform is used;
- (u) personnel are to maintain firm footing on platform floor unless secured by body belt and lanyard. Use of railings, planks, ladders, etc., on the platform for purpose of achieving additional reach or height is prohibited;
- (v) be certain that personnel and equipment on the platform do not exceed the available space;
- (w) platform shall be lowered to floor level for personnel to enter and exit. Personnel shall not climb on any part of the rough terrain forklift truck in attempting to enter and exit.
- (x) any body belt, lanyard, or deceleration device which has sustained permanent deformation or is otherwise damaged shall be replaced;
- (y) prohibit modification to the platform that is detrimental to its safe use.

## 8.24 Platforms for Elevating Personnel

### 8.24.1

Design requirements for the manufacture of the platform shall include the following:

- (a) a platform floor having a slip resistant surface located not more than 8 in. (200 mm) above the normal load supporting surface of the fork;
- (b) floor dimensions which shall not exceed two times the load center distance listed on the rough terrain forklift 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 10 in. (250 mm) on either side]. Minimum space for each person on the platform shall not be less than 18 in. (450 mm) in either direction.
- (c) a 4 in. (100 mm) minimum height toe plate which may be omitted at the access opening;
- (d) an overhead protection device, when requested by the user;
- (e) protection for personnel in their normal working position on the platform from moving parts of the rough terrain forklift truck that represent a hazard;
- (f) information prominently indicated on the platform:
  - (1) maximum work load including personnel and equipment;
  - (2) weight of empty platform.
- (g) means so that the platform can only be centered laterally on the rough terrain forklift truck and retained against the vertical face of the forks, carriage, or lifting mechanism;
- (h) a means to securely attach the platform to the lifting mechanism, and to prevent the platform from inadvertent pivoting;
- (i) controls, when supplied for use on the elevating platform, shall be readily accessible to the operator and protected from damage and inadvertent actuation. They shall include provision to stop and start the engine of the rough terrain forklift truck and to lower the platform in case of engine failure;

- (j) means shall be provided to render inoperative all operating controls, other than those on the elevating platform, when the controls on the elevating platform have been selected for use. Only one location of controls shall be capable of being operated at one time, with the exception of the emergency control(s) covered in para. 8.24.1 (k);
- (k) when controls are provide on the platform, a clearly identified emergency lowering means available at ground level shall be provided. Such means shall be protected against misuse.
- (l) restraining means such as a guardrail or a means for securing personnel such as a body belt or lanyard. A guardrail or similar structure shall have a nominal height to the platform floor of 42 in. (1066 mm) around its upper periphery and include a midrail. It may be hinged, removable, or of chains, and used if proper positioning is easily discernible. Such restraining means shall be capable of withstanding a concentrated horizontal force of 200 lb (890 N) applied at the point of least resistance without permanent deformation. A body belt and lanyard is to have an attachment point provided overhead for freedom of movement, and its length is to limit free-fall to 5 ft (1500 mm) measured from the point of attachment to the operator. The complete system shall be capable of withstanding three consecutive drop tests to simulate a 250 lb (113 kg) person falling 6 ft (1800 mm) without allowing the test weight to fall free to the ground. A deceleration device may be included.
- (m) lanyards, when provided, shall be arranged so as not to cause a tripping hazard;
- (n) body belts, when provided, should have a width of at least 1.75 in. (44 mm);
- (o) structural safety factor – all load supporting structural elements of the work platform shall have a structural safety factor of not less than 2 to 1 based on the minimum yield strength of the materials used.

## EXCERPTS FROM OSHA 1926.502, SUBPART M, FALL PROTECTION

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### 1926.502(a)(2)

Employers shall provide and install all fall protection systems required by this subpart for an employee, and shall comply with all other pertinent requirements of this subpart before that employee begins the work that necessitates the fall protection.

### 1926.502(b)

"Guardrail systems." Guardrail systems and their use shall comply with the following provisions:

#### 1926.502(b)(1)

Top edge height of top rails, or equivalent guardrail system members, shall be 42 inches (1.1 m) plus or minus 3 inches (8 cm) above the walking/working level. When conditions warrant, the height of the top edge may exceed the 45-inch height, provided the guardrail system meets all other criteria of this paragraph.

Note: When employees are using stilts, the top edge height of the top rail, or equivalent member, shall be increased an amount equal to the height of the stilts.

#### 1926.502(b)(2)

Midrails, screens, mesh, intermediate vertical members, or equivalent intermediate structural members shall be installed between the top edge of the guardrail system and the walking/working surface when there is no wall or parapet wall at least 21 inches (53 cm) high.

#### 1926.502(b)(2)(i)

Midrails, when used, shall be installed at a height midway

between the top edge of the guardrail system and the walking/working level.

**1926.502(b)(2)(ii)**

Screens and mesh, when used, shall extend from the top rail to the walking/working level and along the entire opening between top rail supports.

**1926.502(b)(2)(iii)**

Intermediate members (such as balusters), when used between posts, shall be not more than 19 inches (48 cm) apart.

**1926.502(b)(2)(iv)**

Other structural members (such as additional midrails and architectural panels) shall be installed such that there are no openings in the guardrail system that are more than 19 inches (.5 m) wide.

**1926.502(b)(3)**

Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds (890 N) applied within 2 inches (5.1 cm) of the top edge, in any outward or downward direction, at any point along the top edge.

**1926.502(b)(4)**

When the 200 pound (890 N) test load specified in paragraph (b)(3) of this section is applied in a downward direction, the top edge of the guardrail shall not deflect to a height less than 39 inches (1.0 m) above the walking/working level. Guardrail system components selected and constructed in accordance with the Appendix B to subpart M of this part will be deemed to meet this requirement.

**1926.502(b)(5)**

Midrails, screens, mesh, intermediate vertical members, solid panels, and equivalent structural members shall be capable of withstanding, without failure, a force of at least 150 pounds (666 N) applied in any downward or outward direction at any point along the midrail or other member.

**1926.502(b)(6)**

Guardrail systems shall be so surfaced as to prevent injury to an employee from punctures or lacerations, and to prevent snagging of clothing.

**1926.502(b)(7)**

The ends of all top rails and midrails shall not overhang the terminal posts, except where such overhang does not constitute a projection hazard.

**1926.502(b)(8)**

Steel banding and plastic banding shall not be used as top rails or midrails.

**1926.502(b)(9)**

Top rails and midrails shall be at least one-quarter inch (0.6 cm) nominal diameter or thickness to prevent cuts and lacerations. If wire rope is used for top rails, it shall be flagged at not more than 6-foot intervals with high-visibility material.

**1926.502(d)**

"Personal fall arrest systems." Personal fall arrest systems and their use shall comply with the provisions set forth below. Effective January 1, 1998, body belts are not acceptable as part of a personal fall arrest system. Note: The use of a body belt in a positioning device system is acceptable and is regulated under paragraph (e) of this section.

**1926.502(d)(15)**

Anchorage used for attachment of personal fall arrest equipment shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or shall be designed, installed, and used as follows:

**1926.502(d)(15)(i)**

as part of a complete personal fall arrest system which maintains a safety factor of at least two; and

**1926.502(d)(15)(ii)**

under the supervision of a qualified person.

**1926.502(d)(16)**

Personal fall arrest systems, when stopping a fall, shall:

**1926.502(d)(16)(i)**

limit maximum arresting force on an employee to 900 pounds (4 kN) when used with a body belt;

**1926.502(d)(16)(ii)**

limit maximum arresting force on an employee to 1,800 pounds (8 kN) when used with a body harness;

**1926.502(d)(16)(iii)**

be rigged such that an employee can neither free fall more than 6 feet (1.8 m), nor contact any lower level;

**1926.502(j)**

"Protection from falling objects." Falling object protection shall comply with the following provisions:

**1926.502(j)(1)**

Toeboards, when used as falling object protection, shall be erected along the edge of the overhead walking/working surface for a distance sufficient to protect employees below.

**1926.502(j)(2)**

Toeboards shall be capable of withstanding, without failure, a force of at least 50 pounds (222 N) applied in any downward or outward direction at any point along the toeboard.

**1926.502(j)(3)**

Toeboards shall be a minimum of 3 1/2 inches (9 cm) in vertical height from their top edge to the level of the walking/working surface. They shall have not more than 1/4 inch (0.6 cm) clearance above the walking/working surface. They shall be solid or have openings not over 1 inch (2.5 cm) in greatest dimension.

**1926.502(j)(4)**

Where tools, equipment, or materials are piled higher than the top edge of a toeboard, paneling or screening shall be erected from the walking/working surface or toeboard to the top of a guardrail system's top rail or midrail, for a distance sufficient to protect employees below.

**1926.502(j)(5)**

Guardrail systems, when used as falling object protection, shall have all openings small enough to prevent passage of potential falling objects.