

## Part 399 - Employee Safety and Health Standards

### Subparts A-K [Reserved]

### Subpart L - Step, Handhold, and Deck Requirements for Commercial Motor Vehicles

#### §399.201 Purpose and scope.

This subpart prescribes step, handhold, and deck requirements on commercial motor vehicles. These requirements are intended to enhance the safety of motor carrier employees.

#### §399.203 Applicability.

This subpart applies to all trucks and truck-tractors, having a high profile cab-over-engine (COE) configuration, for entrance, egress and back of cab access, manufactured on and after September 1, 1982.

#### §399.205 Definitions.

**Cab-over-engine (COE).** A truck or truck-tractor having all, or the front portion, of the engine under the cab.

**COE — High profile.** A COE having the door sill step above the height of the front tires.

**Deck plate.** A horizontal surface designed to provide a person with stable footing for the performance of work such as the connection and disconnection of air and electrical lines, gaining access to permanently-mounted equipment or machinery or for similar needs.

**Door sill step.** Any step normally protected from the elements by the cab door when closed.

**Effective peripheral grip.** Any shaped surface, free of sharp edges, in which a full grasp can be made to secure a handhold by a person.

**Fingertip grasp.** A handhold surface which provides a person contact restricted to finger segments 1 and/or 2 only; or which limits wrap-around closure of finger segment 1 with the palm of the hand to 90 degrees as shown in Illustration I.

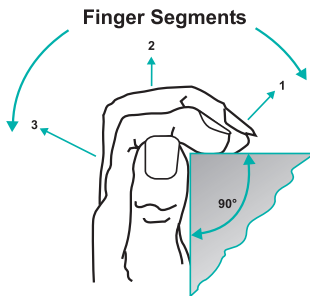


Illustration I • Fingertip Grasp

**Full grasp.** A handhold surface which provides a person contact with finger segments 2 and 3 and which provides space for finger segment 1 to wrap around toward the palm of the hand beyond the 90-degree surface restriction shown in Illustration I. The handhold need not require contact between fingers and thumb. For example, the hand position shown in Illustration II qualifies as full grasp.

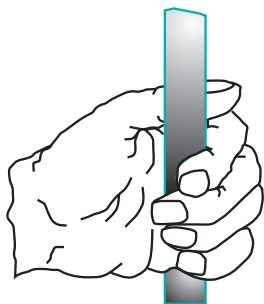


Illustration II • Full Grasp

**Ground.** The flat horizontal surface on which the tires of a motor vehicle rest.

**Handhold.** That which qualifies as providing full grasp if a person is able to find a hand position on the handhold which allows more than fingertip grasp.

**Handprint.** The surface area contacted by the hand when grasping a handhold. The size of this area is the width of the hand across the metacarpal and half the circumference of the handhold. The hand breadth of the typical person is 88.9 millimeters (3.5 inches).

**Person.** Any individual within the 5th percentile female adult through the 95th percentile male adult of anthropometric measures as described by the 1962 Health Examination Survey, "Weight, Height and Selected Body Dimensions of Adults, United States 1960-1962" which is incorporated by reference. It is

Public Health Service publication No. 1000-Series 11-No. 8 and is for sale from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. When ordering use NTIS Accession No. PB 267174. It is also available for inspection at the Office of the Federal Register Library, 800 North Capitol Street, NW, suite 700, Washington, DC 20408. This incorporation by reference was approved by the Director of the Federal Register on July 17, 1979. These materials are incorporated as they exist on the date of the approval and a notice of any change in these materials will be published in the Federal Register.

**Slip resistant material.** Any material designed to minimize the accumulation of grease, ice, mud or other debris and afford protection from accidental slipping.

#### §399.207 Truck and truck-tractor access requirements.

(a) **General rule.** Any person entering or exiting the cab or accessing the rear portion of a high profile COE truck or truck-tractor shall be afforded sufficient steps and handholds, and/or deck plates to allow the user to have at least 3 limbs in contact with the truck or truck-tractor at any time. This rule applies to intermediate positions as well as transition between intermediate positions.

To allow for changes in climbing sequence, the step design shall include, as a minimum, one intermediate step of sufficient size to accommodate two feet.

**EXCEPTION.** If air and electrical connections necessary to couple or uncouple a truck-tractor from a trailer are accessible from the ground, no step, handholds or deck plates are required to permit access to the rear of the cab.

(b) **Performance requirements.** All high profile COE trucks or truck-tractors shall be equipped on each side of the vehicle where a seat is located, with a sufficient number of steps and handholds to conform with the requirements of paragraph (a) of this section and shall meet the performance requirements:

(1) **Vertical height.** All measurements of vertical height shall be made from ground level with the vehicle at unladen weight.

(2) **Distance between steps.** The distance between steps, up to and including the door sill step, shall provide any person a stable resting position which can be sustained without body motion and by exerting no more arm force than 35 percent of the person's body weight per grasp during all stages of entry and exit. This criterion applies to intermediate positions as well as transition between intermediate positions above ground level.

(i) **When the ground** provides the person foot support during entry or is the final step in the sequence during exit, and the step is 508 millimeters (20 inches) or more above ground, the stable resting position shall be achievable by the person using both hands to grasp the handhold(s) and requiring no more arm force than 35 percent of body weight per grasp.

(ii) **The vertical height** of the first step shall be no more than 609 millimeters (24 inches) from ground level.

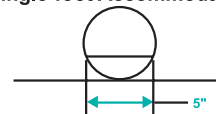
(3) **Construction.** Each step or deck plate shall be of a slip resistant design which minimizes the accumulation of foreign material. Wherever practicable, a self-cleaning material should be used.

(4) **Foot accommodation.** Step depth or clearance and step width necessary to accommodate a climbing person are defined by using a minimum 127 millimeter (5 inch) diameter disc as shown in Illustration III.

(i) **Single foot accommodation.** The disc shall fit on a tread rung, or in a step recess, with no exterior overhang.

(ii) **Two-foot accommodation.** Two discs shall fit on a tread rung, or in a step recess, with no exterior overhang.

#### Single-foot Accommodation



#### Two-foot Accommodation

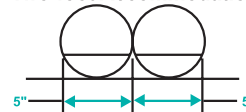


Illustration III • Foot Accommodation

**NOTE:** The 127 millimeter (5 inch) disc is only intended to test for a minimum depth and width requirement. The step need not retain the disc at rest.

(5) **Step strength.** Each step must withstand a vertical static load of at least 204 kilograms (450 pounds) uniformly distributed over any 127 millimeter (5 inch) increment of step width.

(6) **Handhold location.** A handhold must be located within the reach of any person entering or exiting the vehicle.

(7) **Exterior mounting specifications for handholds.** Each handhold, affixed to the exterior of the vehicle, shall have at least 38 millimeters (1.5 inches) clearance between the handhold and the surface to which it is mounted for the distance between its mounting points.

(8) **Handhold size and shape.** Each handhold shall be free of sharp edges (minimum 1 millimeter [0.04 inch] radius) and have an effective peripheral grip length that permits full grasp by any person.

(9) **Handhold strength.** Each handhold shall withstand a horizontal static load of at least 114 kilograms (250 pounds) uniformly distributed over the area of a hand print and applied away from the mounting surface.

(10) **Deck plates.** Deck plates shall be on the rear of a truck-tractor as necessary to couple or uncouple air and/or electrical connections.