

WAC 296-155-965 Overhead protection for operators of agricultural and industrial tractors. (1) General.

(a) Purpose. When overhead protection is provided on wheel-type agricultural and industrial tractors, the overhead protection must be designed and installed according to the requirements contained in this section. The provisions of WAC 296-155-955 for rubber-tired dozers and rubber-tired loaders may be used in lieu of the standards contained in this section. The purpose of the standard is to minimize the possibility of operator injury resulting from overhead hazards such as flying and falling objects, and at the same time to minimize the possibility of operator injury from the cover itself in the event of accidental upset.

(b) Applicability. This section applies to wheel-type agricultural tractors used in construction work and to wheel-type industrial tractors used in construction work. See WAC 296-155-960 (1) and (3). In the case of machines to which WAC 296-155-625 (relating to site clearing) also applies, the overhead protection may be either the type of protection provided in WAC 296-155-625 or the type of protection provided by this section.

(2) Overhead protection. When overhead protection is installed on wheel-type agricultural or industrial tractors used in construction work, it must meet the requirements of this subsection. The overhead protection may be constructed of a solid material. If grid or mesh is used, the largest permissible opening must be such that the maximum circle which can be inscribed between the elements of the grid or mesh is 1.5 in. (38 mm.) in diameter. The overhead protection must not be installed in such a way as to become a hazard in the case of upset.

(3) Test procedures - General.

(a) The requirements of WAC 296-155-960 (5), (6) and (7) must be met.

(b) Static and dynamic rear load application must be uniformly distributed along a maximum projected dimension of 27 in. (686 mm.) and a maximum area of 160 in.² (1,032 cm.²) normal direction of load application. The load must be applied to the upper extremity of the frame at the point which is midway between the centerline of the seat and the inside of the frame upright.

(c) The static and dynamic side load application must be uniformly distributed along a maximum projected dimension of 27 in. (686 mm.) and a maximum area of 160 in.² (1,032 cm.²) normal to the direction of load application. The direction of load application is the same as in WAC 296-155-960 (8) and (9). To simulate the characteristics of the structure during an upset, the center of load application may be located from a point 24 in. (610 mm.) (K) forward to 12 in. (305 mm.) (K) forward to 12 in. (305 mm.) (L) rearward of the front of the seat backrest to best utilize the structural strength. See Figure V-25.

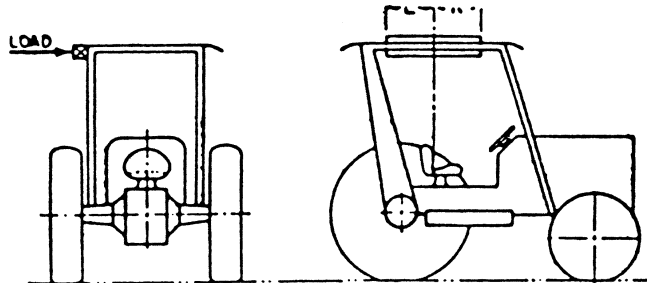


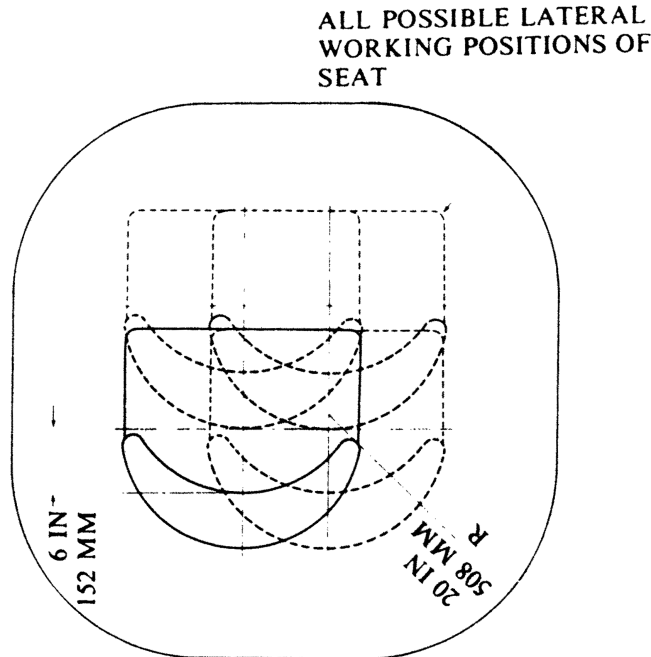
FIGURE V-25
Location for side load.

(4) Drop test procedures.

(a) You must subject the same frame to the drop test following either the static or dynamic test.

(b) A solid steel sphere or material of equivalent spherical dimension weighing 100 lb. (45.4 kg.) must be dropped once from a height 10 ft. (3,048 mm.) above the overhead cover.

(c) The point of impact must be on the overhead cover at a point within the zone of protection as shown in Figure V-26, which is furthest removed from major structural members.



(5) Crush test procedure.

(a) You must subject the same frame to the crush test following the drop test and static or dynamic test.

(b) The test load must be applied as shown in Figure V-27 with the seat positioned as specified in WAC 296-155-960 (5)(d). Loading cylinders must be pivotally mounted at both ends. Loads applied by each cylinder must be equal within 2%, and the sum of the loads of the two cylinders must be two times the tractor weight as set forth in WAC 296-155-960 (6)(a). The maximum width of the beam illustrated in Figure V-27 must be 6 in. (152 mm.).

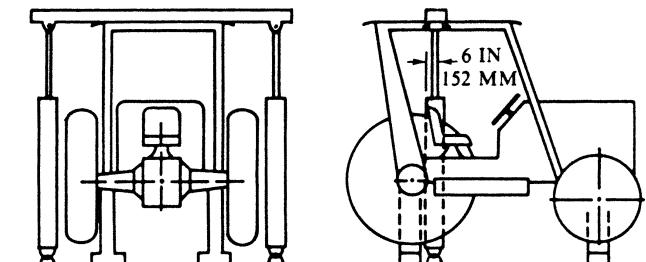


FIGURE V-27
Method of load application for crush test.

(6) Performance requirements.

(a) General. You must meet the performance requirements set forth in WAC 296-155-960 (10)(b), (c) and (d).

(b) Drop test performance requirements.

(i) Instantaneous deformation due to impact of the sphere must not enter the protected zone as illustrated in Figures V-25, V-26, and V-28.

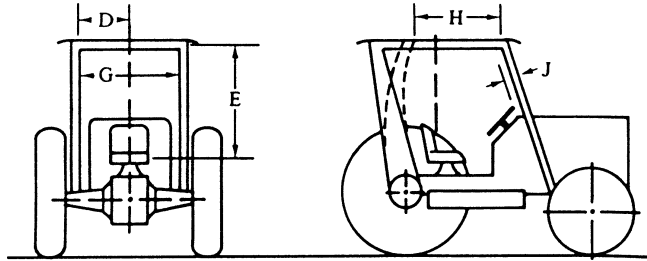


FIGURE V-28
Protected zone during crush and drop tests.

(ii) In addition to the dimensions set forth in WAC 296-155-960 (10)(a)(i) the following dimensions apply to Figure V-28:

H = 17.5 in. (444 mm.).

J = 2 in. (50.8 mm.) measured from the outer periphery of the steering wheel.

(c) Crush test performance requirements. You must not violate the protected zone as described in Figure V-28.

(7) Source of standard. This standard is derived from, and re-states, the portions of Society of Automotive Engineers Standard J167 which pertain to overhead protection requirements. The full title of the SAE standard is: Protective Frame with Overhead Protection—Test Procedures and performance requirements. You must resort to the SAE standard in the event that questions of interpretation arise. The SAE standard appears in the 1971 SAE Handbook.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, 49.17.060. WSR 16-09-085, § 296-155-965, filed 4/19/16, effective 5/20/16; Order 74-26, § 296-155-965, filed 5/7/74, effective 6/6/74.]