

Submitted for recognition as an American National Standard

**(R) Tire Guards for Operator Protection—
Earthmoving Haulage Machines**

1. **Scope**—This SAE Standard establishes a criteria for a minimum zone of protection for the operator of the machine and establishes certain structural requirements for guards on pneumatic-tired earthmoving haulage machines capable of speeds in excess of 25 km/h. Earthmoving machines covered by this document are dumpers and tractor-scrappers as identified in SAE J/ISO 6165.

2. **References**

2.1 **Applicable Publications**—The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated, the latest revision of SAE publications shall apply.

2.1.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J397 OCT95—Deflection Limiting Volume—Protective Structures Laboratory Evaluation

SAE J/ISO 6165—Earthmoving Machinery—Basic Types—Vocabulary

3. **Definitions**

3.1 **Zone of Protection**—The area which shall be protected from material thrown tangentially from a rotating tire of the machine, in a plane parallel to the rotation of the tire for all oscillation and steering angles in a hauling position.

4. **General Requirements**

4.1 **Zones of Protection**

4.1.1 **FORWARD ZONE OF PROTECTION**—When the operator position is located forward of the tire centerline. This area is defined by a line intersecting the forward extremity of the Deflection Limiting Volume (DLV), as defined in SAE J397, and by a vertical tangent to the rear edge of the tire as shown in Figure 1A.

4.1.2 **REARWARD ZONE OF PROTECTION**—When the operator position is located rearward of the tire centerline. This area is defined by lines drawn tangent to the tire and intersecting the extremities of the DLV. The rear zone line shall form an inclusive angle to the ground line of not greater than 90 degrees as shown in Figure 1B.

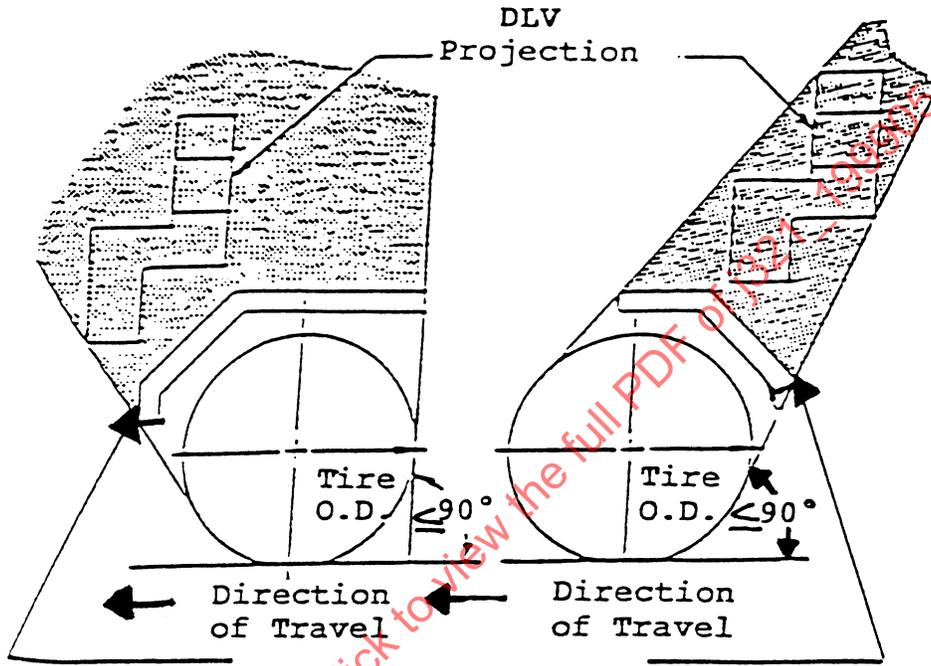
4.1.3 The width of the Zone of Protection shall be as shown in Figure 2.

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- 4.2 **Guard**—The guard shall provide circumferential coverage per 4.1.1 and Figure 1A and/or 4.1.2 and Figure 1B.
- 4.3 **Protection**—This may be accomplished by a guard, structure of the machine and/or attachments, or by the lateral location of the DLV away from the plane of the tire.
- 4.4 **Material**—The guard may be either rigid or flexible. The construction shall provide energy absorption (at least equal to 2 mm mild steel sheet), for tangentially-thrown material without rupture.



POSSIBLE GUARD OUTLINE
SHAPE OPTIONAL

Figure 1A

Figure 1B

FIGURE 1—CIRCUMFERENTIAL COVERAGE REQUIREMENTS WITH OPERATOR POSITION LOCATED FORWARD OF TIRE(S) AND FIGURE 1B—CIRCUMFERENTIAL COVERAGE REQUIREMENTS WITH OPERATOR POSITION LOCATED REARWARD OF TIRE(S)

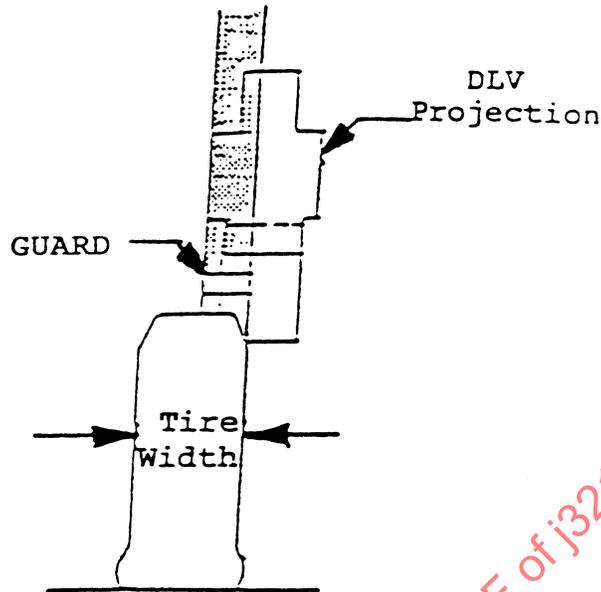


FIGURE 2—LATERAL TIRE COVERAGE REQUIREMENTS FOR OPERATOR POSITION PROTECTION (ON A LEVEL SURFACE)

NOTE—Shaded areas to Figures 1A, 1B, and 2 indicate minimum zone of protection in a hauling position.

5. **Notes**

- 5.1 **Marginal Indicia**—The change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

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