



400 Commonwealth Drive, Warrendale, PA 15096-0001

# SURFACE VEHICLE STANDARD

**SAE** J957  
ISO6484

REV.  
JUN93

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Superseding J957 JAN85

An American National Standard

## (R) CAPACITY RATING—ELEVATING SCRAPERS

This document is equivalent to ISO 6484-DEC92 except for the addition of SAE document references in Sections 1 and 2.

**Foreword**—This Document has also changed to comply with the new SAE Technical Standards Board format.

**1. Scope**—This SAE Standard specifies a procedure for approximating the volume of a typical material carried in the bowl of an elevating scraper as defined in SAE J728 and SAE J1057. The volumes are based on the inside dimensions of the bowl and a representative volume on top of the bowl. This rating method is intended to provide a consistent means of comparing capacities; it is not intended to define actual capacities that might be observed in any specific application.

### **2. References**

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

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

SAE J728 JUL90—Component Nomenclature—Scrapers  
SAE J1057 SEP88—Identification Terminology of Earthmoving Machines

2.1.2 ISO PUBLICATION—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ISO 7133-1986—Earth-moving machinery—Tractor-scrapers—Terminology and commercial specifications

### **3. Definitions**

**3.1 Elevating Scraper**—Scraper, as defined in ISO 7133, SAE J728, or SAE J1057, with a powered mechanism fixed to the scraper bowl to assist in loading material.

**3.2 Elevating Scraper Components**—Components as identified in Figures 1, 2, and 3.

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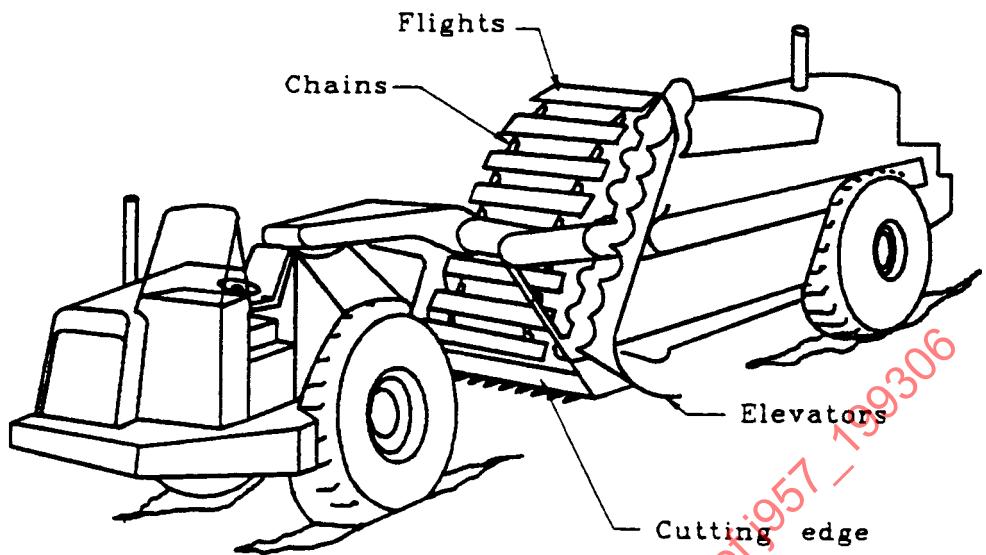


FIGURE 1—ELEVATING SCRAPER

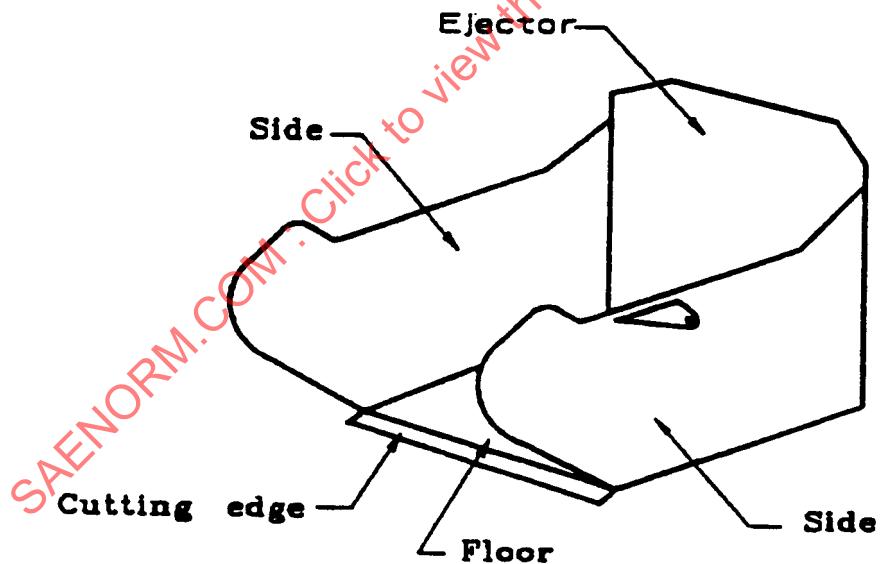


FIGURE 2—COMPONENTS OF A SCRAPER BOWL

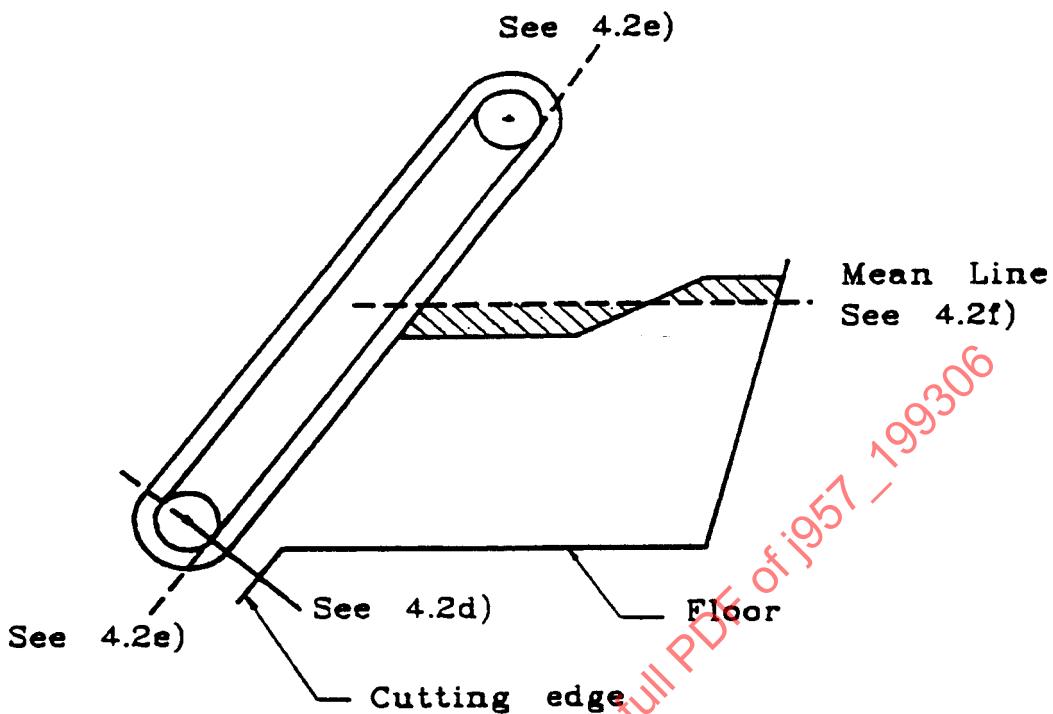


FIGURE 3—BOUNDARIES OF THE STRUCK VOLUME PLANES RELATED TO THE ELEVATOR IDLER AND FLIGHTS

#### 4. *Volumetric Ratings*

## 4.1 Positioning of the Bowl

- 4.1.1 The bowl shall be positioned so that the lowest inner flat surface of the floor is horizontal or as close to horizontal as possible.
- 4.1.2 The material discharging mechanism shall be positioned to give maximum volumetric capacity.
- 4.1.3 The elevating mechanism shall be positioned to give the minimum distance between the cutting edge and the path of the outer tips of the elevator. This position shall be within the manufacturer's specifications.

**4.2 Boundaries of the Struck Volume**—The boundaries of the struck volume shall be defined by:

- a. The interior surfaces of the bowl sides
- b. The interior surface of the rear of the bowl, or ejector mechanism
- c. The bowl floor
- d. The plane, perpendicular to the forward surface of the cutting edge, that passes through the centerline of the elevator idler (see Figure 3)
- e. The plane of, or linear extension of, the inner paths of the elevator flights adjacent to the load (see Figure 3)
- f. The plane defined by the mean lines, i.e., those horizontal lines above which, in a side view of the bowl, there is an area of the bowl side equal to the non-bowl side area under the lines (see Figure 3)
- g. The vertical planes from the interior surfaces of the bowl sides to the plane of the mean lines

**4.3 Boundaries of the Top (Heaped) Volume**—The boundaries of the top (heaped) volume shall be defined by:

- The upper horizontal surface of the struck volume (see 4.2 e)
- The plane of, or inner extension of, the plane of the inner paths of the elevator flights adjacent to the load (see 4.2 e)
- The tangential plane from the top of the solid portion of the rear of the bowl, or ejector, mechanism, to the path of the outer tips of the elevator flights, where the point of tangency is at the upper end of the elevator (see Figure 4 )

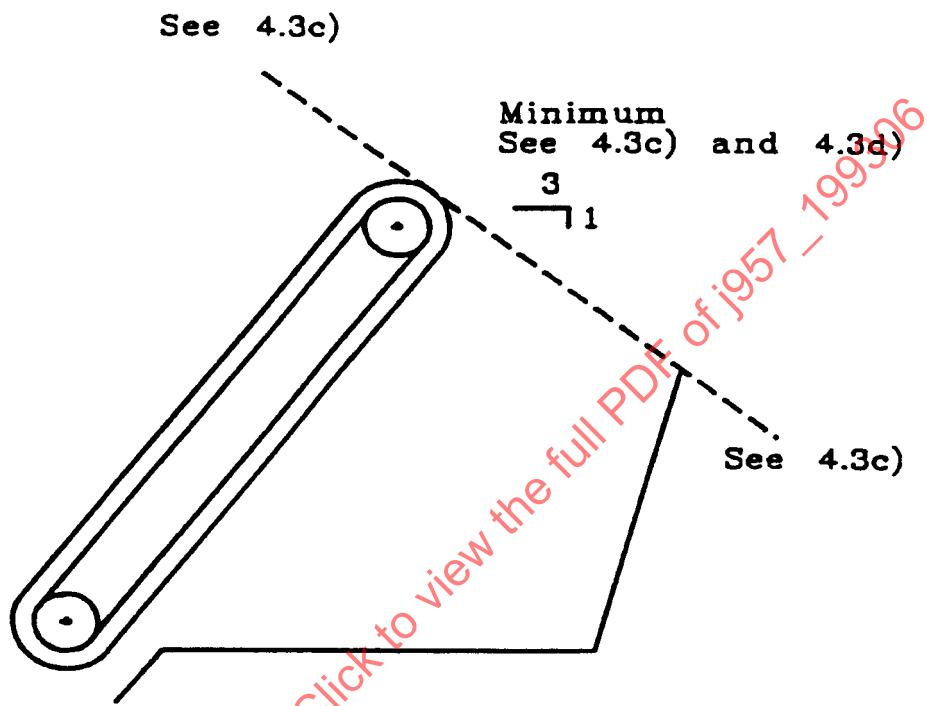


FIGURE 4—BOUNDARIES OF THE TOP (HEAPED)—TANGENTIAL PLANE

The slope of this plane shall not be less than 3:1 (18.4 degrees) forward and upward from the top of the solid portion of the rear of the bowl or ejector mechanism. If the slope is less than 3:1, this boundary plane shall be defined in 4.3 d.

- A plane of 3:1(rear and down) slope tangent to the outer tips of the elevator flights that ends when it intersects the rear of the bowl
- Planes of 1:1 (45 degrees) slope in and up from the bowl side mean lines (see Figure 5)

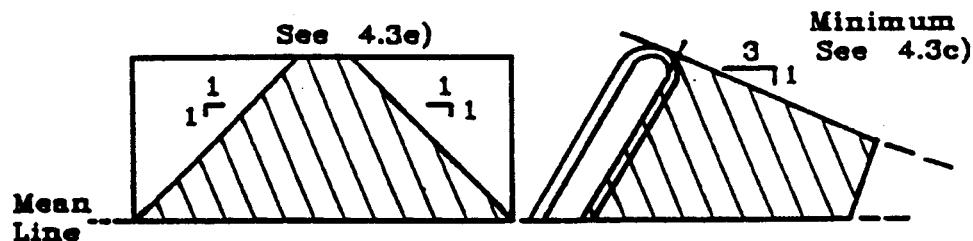


FIGURE 5—BOUNDARIES OF TOP (HEAPED) VOLUME