

SURFACE VEHICLE STANDARD

SAE J741

REV.
JAN85

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Submitted for recognition as an American National Standard

(R) CAPACITY RATING - SCRAPER, OPEN BOWL

1. PURPOSE:

The purpose of this standard is to provide a uniform method of calculating the SAE rated volumetric capacity.

2. SCOPE:

This standard applies to Open Bowl Scrapers, as defined in SAE J728 and J1057. It is similar to ISO/DIS 6485.

3. VOLUMETRIC CAPACITY:

Standard ratings shall include both struck and heaped capacities.

3.1 Bowl Position:

3.1.1 The bowl shall be positioned so that the lowest inner flat surface of the floor is horizontal.

3.1.2 The ejector shall be in the normal hauling mode.

3.1.3 The apron shall be fully closed.

3.2 Struck Volume:

3.2.1 Struck volume shall be the volume enclosed by the bowl sides, the closed apron, the ejector, the bowl floor, and the plane through the mean line of the bowl sides.

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- 3.2.1.1 Mean lines are horizontal lines along the top edges of the bowl sides located so that, in a side view of the bowl, there is an area of bowl side above the line equal to the nonbowl side area under the line.
- 3.2.2 When the top inner edge of the apron is below the mean line of the bowl side, a plane of 1:1 slope is added up and rearward, from the top inner edge of the apron to the mean line plane.
- 3.2.3 Top extension of the ejector or apron above the mean line plane shall not be included in the determination of struck capacity.
- 3.2.4 The effect of local discontinuities - gussets, apron arms, or other internal projections shall be ignored.

3.3 Heaped Capacity:

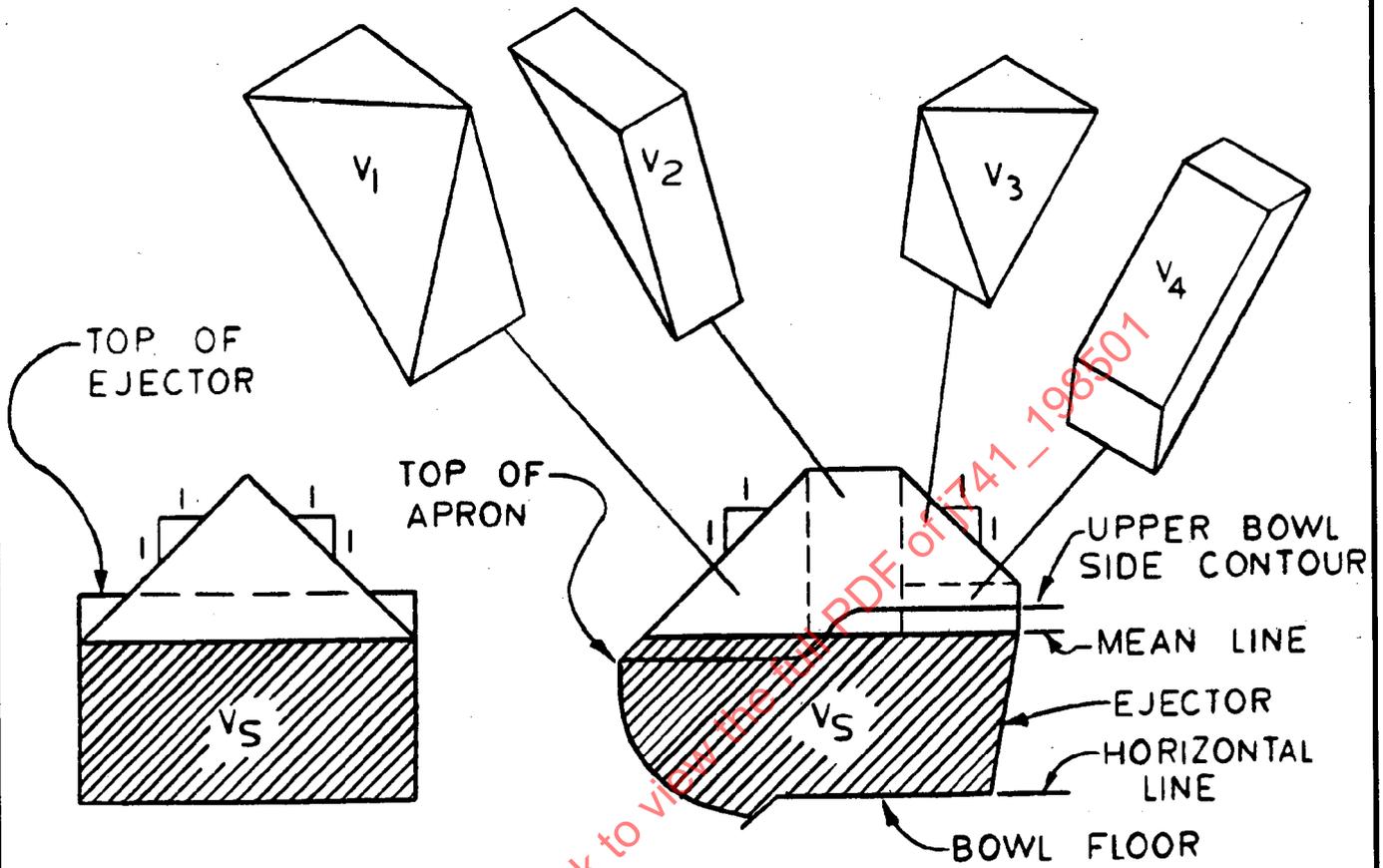
- 3.3.1 Heaped capacity shall be the sum of the struck volume plus the top volume enclosed by the four planes at 1:1 slope extending upward and inward from the top of the solid portion of the ejector or integral rear plate, apron, and from the mean line of the bowl sides.
- 3.3.2 The effect of overhead structures, such as sheave guides, cables, and guards shall be ignored.

4. SCRAPER RATINGS:

- 4.1 Struck capacity shall be the calculated struck volume.
- 4.2 Increments of struck and heaped capacity shall be based on the struck volume as follows:

Range of Rated Size, m ³ Struck	Increments m ³ (yd ³)
Less than 10	0.1 (0.1)
10 to less than 50	0.5 (0.5)
50 and above	1.0 (1.0)

- 4.3 The English equivalent capacity shall be a direct conversion of the actual metric capacity.



VOLUME STRUCK = v_S
 VOLUME HEAPED = $v_H = v_S + (v_1 + v_2 + v_3 + v_4)$

FIGURE 1 - Typical Open Bowl Scraper Volume Computation

RATIONALE:

Subcommittee 9 took the occasion of the five year review of this SAE Standard to rewrite it in the new standard format and to remove the rating of dumper and trailer bodies from the standard. The title of the standard has been changed to Capacity Rating - Scraper-Open Bowl. A new standard, XJ1363, has been written to cover dumpers and trailers.

The standard was rewritten by an ad-hoc committee made up of representatives of scraper manufacturers. The format of the revised standard follows, in general, the format of proposed ISO/DIS 6485, "Earth-Moving Machinery - Tractor Scraper - Volumetric Rating" and the SAE format suggested in J1159. Volumes are now given in hard metric. Otherwise, the definition of struck and heaped volumes remain essentially the same as in J741b and ISO 6485. The maximum error in the SAE Standard rating is 2.5% (e.g. rounding of 10.249 m³ to 10.0 m³ or rounding off of 10.25/m³ to 10.5 m³) whereas the maximum error permitted in ISO 6485 is 3%.

Subcommittee 9's contribution to the standard was to revise the wording to be consistent with XJ957a, "Capacity Rating - Elevating Scrapers" and the new proposed standard XJ1363, "Capacity Rating - Dumper Body and Trailer Body."

RELATIONSHIP OF SAE STANDARD TO ISO STANDARD:

Not applicable.

REFERENCE SECTION:

SAE J728, Component Nomenclature-Scrapers

SAE J1057, Identification Terminology of Earthmoving Machines

ISO/DIS 6485

APPLICATION:

This standard applies to Open Bowl Scrapers, as defined in SAE J728 and J1057. It is similar to ISO/DIS 6485.

COMMITTEE COMPOSITION:

DEVELOPED BY THE SAE OFF-ROAD MACHINERY TECHNICAL COMMITTEE: