SAE International™ SURFACE VEHICLE STANDARD

SAE J2473 REAF. NOV2007

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Superseding J2473 AUG2001

Self-Propelled Sweepers and Scrubbers—Maximum Gradient Rating During Hopper Discharge

1. ***Scope***—This SAE Standard establishes the maximum gradient rating during hopper discharge of self-propelled, driver-operated sweepers and scrubbers as defined by SAE J2130.

2. ***References***

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

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

SAE J2130—Self-Propelled Sweepers
SAE J2180—A Tilt-Table Procedure for Measuring the Static Rollover Threshold for Heavy Trucks

2.2 Related Publications—The following publications are for information purposes only and are not a required part of this document.

2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J765 OCT90—Crane Load Stability Test code.

2.2.2 ASME PUBLICATION—Available from ASME, 22 Law Drive, Box 2900, Fairfield, NJ 07007-2900.

ASME B56.1-1993—Safety Standard for Low Lift and High Lift Trucks

3. ***Definitions***

3.1 Hopper Rated Load—The material mass in kilograms of bagged sand applied to the hopper according to the manufacturers' specifications.

3.2 Outriggers—Extendable or fixed arms attached to the base machine that rest on the supporting surface to define the balance point fulcrum. See Figures 1 and 2.

3.3 Tipping Line (side dump)

3.3.1 SWEEPER WITH STEERABLE AXLE—A line connecting the centers of contact of the front and rear tires with the ground reference plane on the tipping side of the machine. See Figures 3 and 4.

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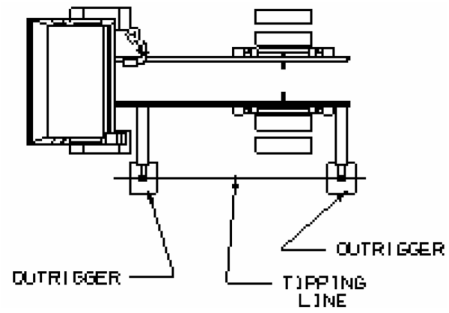

FIGURE 1—OUTRIGGER EQUIPPED

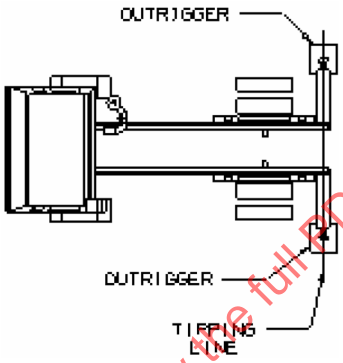

FIGURE 2—OUTRIGGER EQUIPPED

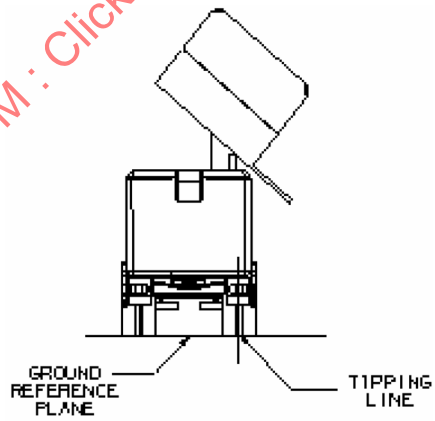

FIGURE 3—SIDE DISCHARGE

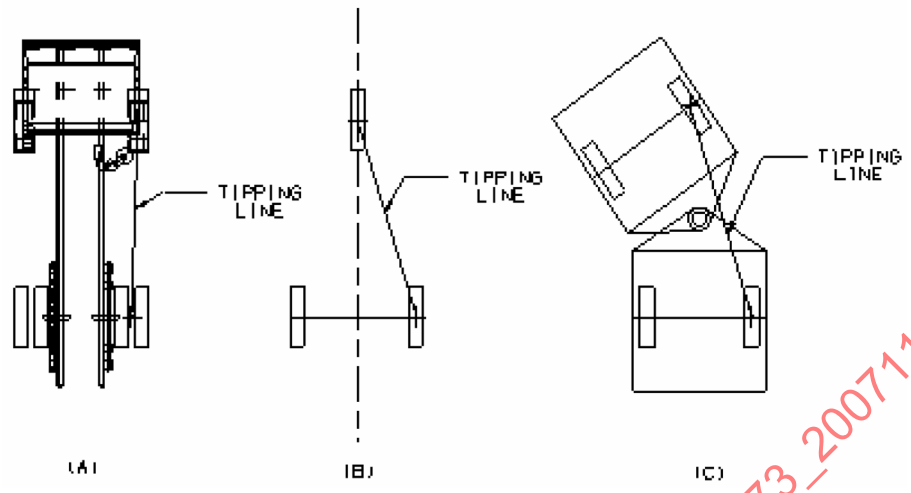

FIGURE 4—SIDE DISCHARGE

3.3.2 SWEEPER WITH OSCILLATING AXLE—A line connecting the center of contact of the tire on the rigid axle with the ground reference plane on the tipping side of the machine and the center of oscillation of the oscillating axle.

3.3.3 SWEEPER WITH ARTICULATING STEERING—A line connecting the center of contact of the tires on the tipping axle when the vehicle is set to turn on full lock away from the tipping side. See Figure 4c.

3.3.4 SWEEPER WITH OUTRIGGERS—A line connecting the center of contract of the outrigger pads with the ground reference plane on the tipping side of the machine. See Figure 1.

3.4 Tipping Line (front or rear dump)

3.4.1 SWEEPER WITHOUT OUTRIGGERS—A line through the front or rear axle on the tipping end of the machine. See Figures 5 and 6.

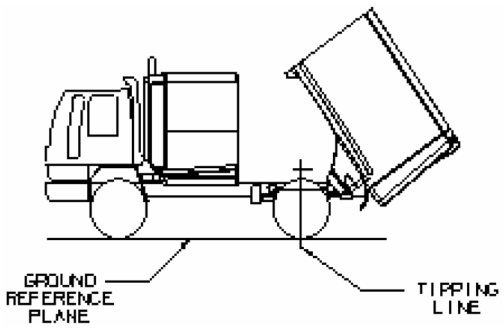

FIGURE 5—REAR DISCHARGE

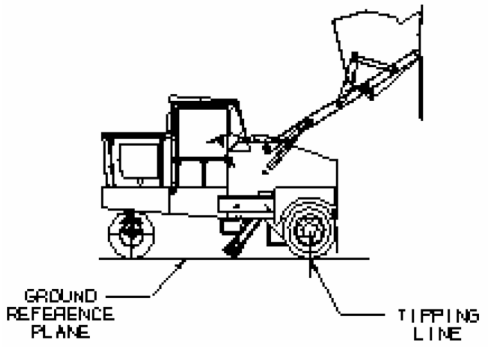

FIGURE 6—FRONT DISCHARGE

3.4.2 SWEEPER WITH OUTRIGGERS—A line connecting the center of contact of the outrigger pads with the ground reference plane on the tipping end of the machine. See Figure 2.

3.5 Balance Point

3.5.1 MACHINE WITHOUT OUTRIGGERS—The moment acting to overturn the machine at hopper rated load that shall not cause any tire on the side opposite the load side to lift more than 1.6 mm from the ground reference.

3.5.2 MACHINE WITH OUTRIGGERS—The moment acting to overturn the machine at hopper rated load that shall not cause any tire or outrigger pad on the side opposite the load to lift more than 1.6 mm from the ground reference plane.

4. Special Requirements

4.1 Stability limitations are not applicable under loads based on structural competence.

4.2 Stability Criteria

4.2.1 Design stability is the measure of a machine's resistance to overturning under rigidly controlled conditions that include consideration for dynamic factors encountered in normal application and operation. Factors that may influence stability include, mass, mass distribution, wheelbase, method of suspension, the deflection resulting from load mass and the orientation on a slope.

4.2.2 Static stability shall be determined by;

a. Tilting Performance Tests—The tests described for the specific type verify truck stability. Ref. tilt table procedure for measuring the static rollover threshold for heavy trucks SAE J2180.

4.2.3 MAXIMUM GRADIENT RATING

a. For those sweepers that can, or must be moved with the hopper in the raised position the following shall apply;
The gradient rating in degrees shall be with a rated capacity load in the hopper, with the hopper fully raised and with the sweeper traveling at the maximum speed possible. In this condition the application of brake or propel controls shall not cause any tire of the sweeper to lose contact with the ground reference plane. The test shall be conducted in both forward and reverse directions.