SAE International™

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J1084

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Operator Protective Structure Performance Criteria for Certain Forestry Equipment

***Foreword*—**This document has also changed to comply with the new SAE Technical Standards Board Format. Scope is Section 1 and References were added as Section 2.

1. Scope

1.1 This SAE Recommended Practice establishes the test procedures and minimum performance criteria necessary to fulfill the intended purpose and is applicable to Skidders, Grapple Skidders, and Crawlers when used in the harvesting of trees.

1.2 Structures meeting these performance criteria may not provide complete operator protection under all conceivable circumstances, but they are expected to minimize the possibility of operator injury under reasonable operating situations.

1.3 The performance requirements and test criteria included in this document are derived from investigations on operator protection that has performed the intended function in a variety of actual operating conditions.

1.4 **Objective—**This document is intended to establish a consistent, repeatable means of evaluating Operator Protective Structures (OPS) on Skidders, Grapple Skidders, and Crawlers when used in the harvesting of trees. Operator Protective Structures are structures/enclosures whose primary purpose is to minimize the possibility of operator injury from hazards such as whipping saplings, branches, jill-poking (spear-like objects), and snapping winch lines with the least adverse effect on operator visibility, comfort, and protection from other hazards.

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—Deflection Limiting Volume—Protective Structures Laboratory Evaluation
SAE J674—Safety Glazing Materials—Motor Vehicles and Motor Vehicle Equipment
SAE J925—Minimum Service Access Dimensions for Off-Road Machines

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2.1.2 ANSI PUBLICATION—Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002.

ANSI Z26.1-1966 (including Supplement Z26.1-1969)

3. Description

3.1 The operator's area shall be completely enclosed with material which meets the performance criteria of Section 6.

3.2 The Operator Protective Structure may be attached to, or form part of, a Roll-Over Protective Structure provided that such attachment does not adversely affect the function and/or performance of the ROPS.

3.3 An alternate exit for emergency purposes shall be provided in the enclosure surface, not on the same side as the normally used entrance. The exit dimensions shall be equal to or larger than the dimensions given in SAEJ925.

3.4 Open mesh material used shall have a maximum nominal opening of 44 x 44 mm (1-3/4 x 1-3/4 in) square, or 44 mm (1-3/4 in) diameter.

3.5 All safety glazing materials shall meet the criteria of SAE J674, except that *safety glazing plastic materials* meeting specifications of test groups 4 and 5 of *ANSI Z26.1-1966 (Including Supplement Z26.1-1969)* may be used anywhere in the machine including the front windshield.

4. Facilities and Instrumentation

4.1 Material, equipment, and tie-down means adequate to insure that the OPS and its machine structure resist the applied force shall be provided.

4.2 Apparatus necessary to push a test object consisting of an 89 mm (3-1/2 in) diameter steel spherical rod end into each surface tested.

4.3 Instrumentation—See Table 1.

TABLE 1—INSTRUMENTATION

Means to Measure	Accuracy
Applied Force, N (lbf)	±5% of Force Measured
Dimensions of Deflection Limiting Volume, mm (in)	±12.5 mm (±0.5 in)

5. Procedure

5.1 The OPS to be tested must be attached to the machine structure in the same manner as it will be attached during machine use. A totally assembled machine is not required; however, the machine structure and frame which support the OPS (and ROPS if they are integral) must represent the actual machine installation. All detachable panels not part of the OPS which might be removed on an operating machine shall be removed so that they do not contribute to the strength of the OPS.

5.2 Force shall be applied slowly by the test object normal to the exterior surface under test (to approximate static loading) until the applied forces reach a value of 17 800 N (4000 lbf). The applied force of 17 800 N (4000 lbf) shall be sustained for a time period of 1 min before being released.

5.3 Loading of open mesh material shall be applied such that projection of the line of force shall pass through the center of the mesh opening.

5.4 If glazing material is used in conjunction with open mesh material conforming to 3.4, the glazing material may be removed for the test.

5.5 If glazing material is utilized alone or in conjunction with external mesh not conforming to 3.4, the load shall be applied to the glazing material only.

5.6 If glazing material is utilized in conjunction with internal mesh not conforming to 3.4, the load must be applied to the combined system.

5.7 When the load is to be applied directly to the glazing material, a non-metallic pad (rubber or synthetic compound suggested) may be inserted between the test object and the glazed panel. The pad shall be of homogeneous construction and uniform density 19 mm (3/4 in) thick, 89 mm (3-1/2 in) diameter and of 90Durometer hardness.

6. Performance Requirements

6.1 When the test object is applied according to Section 5 anywhere on the OPS, the structure must meet the criteria of 6.2.

6.2 The major diameter of the test object shall not pass through the surface under test, or cause any portion of the OPS to impinge on the Deflection Limiting Volume per SAE J397.

6.3 No opening in the OPS shall allow a straight rigid bar of 48 mm (1-7/8 in) diameter to freely enter the OPS.

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