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Cooperative Engineering Program

SAE J1042 FEB86

**Operator Protection
for General Purpose
Industrial Machines**

**SAE Standard
Revised February 1986**

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**Submitted for Recognition as
an American National Standard**

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OPERATOR PROTECTION FOR GENERAL PURPOSE INDUSTRIAL MACHINES

1. **PURPOSE:** The purpose of this Standard, with referenced documents, is to establish performance requirements for protective systems that provide operator protection from hazards of machine rollover and/or falling objects.
2. **SCOPE:** This Standard applies to General Purpose Industrial Machines described in Category 2 of SAE J1116, but excludes skid steer loaders (covered by SAE J1388). Protection for the operator of an attachment (for example, a backhoe) is excluded from the scope of this document.
3. **ROLLOVER PROTECTION:** In order to fulfill the intended purpose of this Standard, subject machines shall be equipped as specified in paragraphs 3.1 and 3.2.
 - 3.1 A rollover protective structure (ROPS) per SAE J1040. Wheeled machines similar in configuration to agricultural tractors may, as an alternative, be equipped with a ROPS per SAE J1194.
 - 3.2 Seat belts conforming to SAE J386. The seat mounting and seat belt anchorage(s) shall meet the requirements of SAE J386 (Part III Industrial Machines Test Procedure).
 - 3.3 To reduce further the probability or severity of operator injury in event of a rollover, attention to the following details is recommended:
 - 3.3.1 Batteries, fuel tanks, oil reservoirs, and coolant systems should be constructed, located, or sealed to minimize likelihood of spillage on the operator.
 - 3.3.2 Edges, corners, or other sharp projections that might be struck by the head or torso of an operator restrained by a seat belt per paragraph 3.2 should be avoided, suitably padded, or designed to break away on impact.

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4. **PROTECTION FROM FALLING OBJECTS:** For operator protection from falling objects, the machine may be equipped with a falling object protective structure (FOPS) per SAE J231 or SAE J1043. Wheeled machines similar in configuration to agricultural tractors may, as an alternative, be equipped with FOPS per SAE J167.
- 4.1 FOPS per SAE J231 may be expected to provide reasonable protection from such falling objects as trees and rocks.
- 4.2 FOPS per SAE J1043 or SAE J167 would be expected to provide reasonable protection from such objects as bricks, concrete blocks, and small hand tools that may fall from heights of not more than 9 m (30 ft) above the ground, encountered in operations such as highway maintenance or landscaping and other services on construction sites.

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RATIONALE:

The subject document is being revised to current SAE terminology and format in a five-year review. Paragraph 3.2 is being changed referring reader to new SAE J386, Operator Restraint Systems for Off-Road Work Machines for testing requirements of seat mounting and seat belt anchorages. The latter document has been balloted to Con-Ag Council with 14 approvals, 1 disapproval, 1 waive and 3 no replies and will appear in the 1986 Handbook. The change proposed would eliminate duplication and potential confusion. HFTC SC4 (responsible for SAE J386) has agreed to form a working group to further evaluate the seat belt anchorage test load magnitudes for construction, general purpose industrial and agricultural machines. ORMTC SC25 will participate in this effort.

RELATIONSHIP OF SAE STANDARD TO ISO STANDARD:

Not applicable.

REFERENCE SECTION:

SAE J167, Overhead Protection for Agricultural Tractors--Test Procedures and Performance Requirements

SAE J231, Minimum Performance Criteria for Falling Object Protective Structure (FOPS)

SAE J386, Operator Restraint Systems for Off-Road Work Machines

SAE J1040, Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry, and Mining Machines

SAE J1043, Performance Criteria for FOPS on General Purpose Industrial Machines

SAE J1116, Categories of Off-Road Self-Propelled Work Machines

SAE J1194, Roll-Over Protective Structures (ROPS) for Wheeled Agricultural Tractors

SAE J1388, Personnel Protection-Skid Steer Loaders

APPLICATION:

The purpose of this Standard, with referenced documents, is to establish performance requirements for protective systems that provide operator protection from hazards of machine rollover and/or falling objects.