

SURFACE VEHICLE RECOMMENDED PRACTICE

An American National Standard

SAE J1038

REV.
DEC92

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(R) RECOMMENDATIONS FOR CHILDREN'S SNOWMOBILE

1. **Scope**—This SAE Recommended Practice establishes the test procedures, performance requirements, and criteria necessary to evaluate minimum safety and reliability requirements of a children's snowmobile as identified in 1.2.

1.1 **Purpose**—The purpose of this document is to set forth minimum safety and reliability criteria for use in the design of a children's snowmobile as defined by SAE J33. Requirements not directly related to operator safety are not included, unless they are to delineate the intended purpose of the vehicle as distinct from a small-sized regular snowmobile.

1.2 **Definition of Children's Snowmobile**—A self-propelled vehicle intended for daylight use, in restricted off-road areas, primarily on snow. This vehicle is intended to be used by a child at least 6 years of age or under adult supervision.

2. References

2.1 **Applicable Publications**—The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply.

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

SAE J33—Snowmobile Definitions and Nomenclature—General

SAE J45—Brake System Test Procedure, Snowmobiles

SAE J92—Snowmobile Throttle Control System

SAE J280—Snowmobile Headlamps

SAE J288—Metallic and Non-Metallic Non-Pressure Integral Fuel Tank—Snowmobiles

SAE J292—Snowmobile and Snowmobile Cutter Lamps, Reflective Devices, and Associated Equipment

SAE J592—Clearance, Side Marker, Identification, and Parking Lights

SAE J1161—Operational Sound Level Measurement Procedure for Snow Vehicles

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

ANSI B71.1-1972—Turf Care Equipment—Power Lawn Mowers, Lawn and Garden Tractors—Safety Specifications

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3. General Criteria

- 3.1 Security Lock**—A secure means of rendering the snowmobile inoperable so that it cannot be started (or operated) without the use of a removable key, or other such device, shall be provided.
- 3.2 Speed**—Maximum speed shall be limited to 13 km/h (8 mph) for vehicles intended for use by children 6 years or older when operating on a smooth, level, hard packed snow surface.
- 3.3 Seating**—Seating capacity shall be limited to one child.
- 3.4 Fuel Capacity**—Fuel tank shall be limited to 2.0 L (0.5 gal) capacity.
- 3.5 Steering Padding**—The nominal central portion of the steering mechanism or handlebars between the throttle and brake control lever facing the operator's position shall be covered by impact-absorbing non-rigid material at least 6 mm (1/4 in) thick.
- 3.6 Controls**—All levers and controls shall have blunt ends. No switch, control, or console shall have sharp edges or protrusions hazardous to the operator under conditions of normal use.
- 3.7 Ski-Tips**—The forward end or projection of the ski commonly known as the ski-tip shall have no edge radius less than 3 mm (1/8 in) in size.
- 3.8 Windshield**—If the vehicle is equipped with a windshield, the windshield material shall meet these requirements.
- 3.8.1 FLEXURE TEST
- Sample size is 30 cm (12 in) by 30 cm (12 in) square, flat sheet.
 - Expose the sample to a temperature of $-29\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ ($-20\text{ }^{\circ}\text{F} \pm 2\text{ }^{\circ}\text{F}$) for 1 h minimum.
 - Bend sample 180 degrees around a 38 mm (1.50 in) radius.
- 3.8.2 IMPACT TEST
- Use 30 cm (12 in) by 30 cm (12 in) flat sheet sample, not the same sample used in 3.8.1 Flexure Test.
 - Expose the sample to a temperature of $-29\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ ($-20\text{ }^{\circ}\text{F} \pm 2\text{ }^{\circ}\text{F}$) for 1 h minimum.
 - Place sample on flat, hard, non-resilient surface, such that it is uniformly supported from underneath.
 - Impact with a 1.25 kg (2.75 lb) weight from a height of 90 cm (36 in). The contact surface of the weight shall be spherical with a radius of 25 mm (1.0 in) maximum.
- 3.8.3 ACCEPTANCE—Cracking of the samples is allowable, provided that no particles break loose from the material. Fracturing of the material is not acceptable.
- 3.8.4 EDGE RADIUS—Windshield edges which are exposed to the operator or bystanders must have a minimum edge radius of 3 mm (1/8 in).
- 3.9 Warning Labels**—The following information shall be contained in Owner's/Operator's Manual or be displayed by a label or plaque permanently affixed to the vehicle:
- 3.9.1 OPERATION—This vehicle is intended for daylight use in restricted off-road areas, primarily on snow, by a child of not less than 6 years of age who is supervised by an adult. Use of this vehicle on public streets, roads, and highways can be hazardous and is prohibited by law in most cases.
- 3.9.2 Do not start or operate this vehicle without guards and shields in position, or with hood not latched in place.

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- 3.9.3 This vehicle is intended for one operator only, no passenger.
- 3.9.4 Verify proper operation of all controls before starting the engine.
- 3.9.5 **PROTECTIVE CLOTHING**—When operating this vehicle, the operator shall wear suitable protective clothing including an approved safety helmet and visor or goggles.
- 3.9.6 **SPEED**—This vehicle can be operated between 0 and 13 km/h (8 mph). However, it is recommended that the adult supervising the child regulate the maximum speed to match the experience and ability of the child. Instructions for regulating maximum speed are provided in the Owner's/Operator's Manual.
- 3.10 Durable Labels**—Labels must meet the specification as stated in ANSI B71.1-1972, Section 7.
- 3.11 Owner's/Operator's Manual**—An Owner's/Operator's Manual shall be supplied with each snowmobile. The manual shall include instructions for regulating maximum speed.
- 4. Equipment and Performance Requirements**
- 4.1 Speed Control**—A device shall be provided to control the maximum speed of the vehicle as indicated in 3.2.
- 4.2 Shields and Guards**—Power-driven parts of the engine, clutch, and drive system, with the exception of the vehicle track and sprocket systems adjacent to the track, shall be isolated by consoles, shields, or guards of sufficient size, shape, and configuration so as to prevent their physical contact with the occupant, bystanders, or any loose clothing worn by the occupant or bystanders during normal use of the vehicle with all consoles, shields, and guards in position and with the hood closed.
- 4.2.1 Shields and guards shall protect the occupant or bystanders in the case of failure of those parts of the drive train known as belts, gears, and chains should a part or parts be ejected from said components or in the case of breakage of such belts or chains as employed.
- 4.2.2 Shields and guards shall prevent inadvertent contact by the occupant with any exposed components at a temperature above 71 °C (150 °F) during normal operation of the vehicle with all consoles, guards, and shields in position and the engine hood closed.
- 4.2.3 As concerns centrifugal clutches, drive pulleys, driven pulleys, torque converters, or similar mechanisms; said components shall withstand being spun about their axis of rotation at an rpm equal to 1.5 times the maximum horsepower rpm of the prime mover and times any effective drive ratio. This rpm shall be maintained for 2 min.
- 4.3 Lighting System Requirements**—A children's snowmobile shall be equipped with the following:
- 4.3.1 At least one white headlight which shall provide a beam that complies with the minimum photometric candlepower requirements set out in Table 1 when tested in accordance with SAE J280.
- 4.3.2 One or two red identification lights on the rear centerline or symmetrically disposed about the rear centerline, in accordance with SAE J592, that shall be illuminated during headlight operation. No stop light shall be required.

TABLE 1—MINIMUM PHOTOMETRIC CANDLEPOWER REQUIREMENTS

Test Point Position in Degrees	Minimum Photometric Candlepower Requirement
1/2 D-V	10 000
1 1/2 D-V	5 000
1 1/2 D-6L to 6R	1 500
1 1/2 D-9L to 9R	1 000
1 1/2 D-15L to 15R	150
3 D-V	1 000
3 D-15L to 15R	100

4.4 Reflectors—Except as noted, reflectors shall conform to the requirements of SAE J292.

Two red reflectors, one on each side as far to the rear as practicable and not less than 15 cm (6 in) above the ground. A reflector of any color except red on each side forward of the handlebars or steering mechanism, not less than 25 cm (10 in) above the ground.

4.5 Emergency Control—The mechanism that controls the power delivered by the engine shall incorporate a device for automatically stopping the engine in the event of a malfunction of the mechanism or as an alternate, an emergency stop switch designed to provide an instantaneous interruption of the engine ignition system shall be provided. This device shall be readily accessible and designed for activation by the operator's right hand about the normal steering position; and it shall maintain interruption once activated without continuous contact from the operator's hand.

Maximum activating force shall be 9 N (2 lb) and the device shall be of a color contrasting with its surroundings.

4.6 Throttle Control System—The throttle control system shall conform to SAE J92 except that:

- a. Paragraphs 4.3.2.1 to 4.3.2.2 - cold temperature test shall be conducted at -29°C (-20°F) rather than -40°C (-40°F).

4.7 Brakes—The vehicle shall be equipped with a brake capable of stopping within 20 ft or locking the track when tested per 4.7.1. No portion of the brake assembly shall fail when tested per 4.7.2 and the requirements of 4.7.1 shall be met without readjustment of the brake mechanism.

4.7.1 BRAKE EFFECTIVENESS TEST—The test shall be conducted on a smooth, level surface covered with turf, not exceeding 76 mm (3 in) in length or compacted snow. The operator's weight shall be between 41 to 50 kg (90 to 100 lb). The operator shall approach a marker at maximum speed and upon reaching the marker, shall squeeze the brake lever with a force equivalent to 45 N (10 lb) maximum force applied as per SAE J45.

4.7.2 BRAKE STRENGTH TEST—A minimum force of 222 N (50 lb) shall be applied to the brake lever as per SAE J45.

4.8 Fuel Tank—The vehicle's fuel tank shall meet the requirements of SAE J288.

4.9 Vehicle Stability—The overturn angle of the vehicle shall be a minimum of 35 degrees in either position when tested per 4.9.1.

Stability determination and measurement shall be conducted under static conditions for the vehicle only without rider stimulation and with the fuel tank filled to capacity.

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The overturn angle shall be the minimum tilt angle at which the machine will overturn. Some form of restraint is allowed to keep the machine from being damaged, but it must reach an unstable condition before the restraint is applied.

4.9.1 **STABILITY TEST**—The vehicle shall be positioned on a variable slope single plane (tilt table), such that the longitudinal centerline of the vehicle is parallel to the axis of rotation of the tilt table. The vehicle shall be supported on its track and skis with slip retention blocks placed on the downhill ski. The table is to be tilted until:

- a. The vehicle overturns; or,
- b. The minimum angle of 35 degrees is attained.

The test shall be conducted with:

- a. The right side on the downhill side.
- b. The left side on the downhill side.

4.10 **Sound Level**—Test as per SAE J1161 with a constant speed of 8 mph.

5. Notes

5.1 **Marginal Indicia**—The change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions have been made to the previous issue of the report. An (R) symbol to the left of the document title indicates a complete revision of the report.

PREPARED BY THE SAE SNOWMOBILE COMMITTEE