



SURFACE VEHICLE RECOMMENDED PRACTICE

J1222

AUG2014

Issued 1981-02
Revised 2014-08

Superseding J1222 MAR2012

Speed Control Assurance for Snowmobiles

RATIONALE

Updates to starting section, and combined normal & unmanned snowmobile test sections to align standard with current snowmobile technology.

1. SCOPE

This SAE Recommended Practice provides minimum requirements and performance criteria for devices to prevent runaway snowmobiles due to malfunction of the speed control system.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publication

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J33 Snowmobile Definitions and Nomenclature - General

3. DEFINITIONS

3.1 SNOWMOBILE

As defined in SAE Recommended Practice J33.

3.2 RUNAWAY PREVENTION DEVICE

A device, of any type, used to automatically prevent undesirable motion of a snowmobile caused by malfunction or maladjustment of the speed control system.

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3.3 THROTTLE CONTROL

A hand-controlled device mounted on the steering control, either a lever type (squeeze grip) or a twist-grip type.

3.4 SPEED CONTROLLER

Devices such as carburetors, fuel injection valves, throttle bodies, etc., used to control the supply of energy (i.e., fuel, spark, etc.) to the prime mover (engine-motor).

3.5 SPEED CONTROL SYSTEM

A complete system used to control engine speed. This includes the throttle control and its means to activate the speed controller, whether it is control linkage, control cable assembly, springs, & brackets or an electronic drive by wire system. Any attachment to the system that affects its operation, such as a warning light switch, safety switch, etc., shall be considered as part of the speed control system.

3.6 Tether Switch

A tether switch is an engine shutoff switch that is attached to the operator by the means of a cord between the operator and switch. The switch is activated by separation of tether cord from the tether switch.

4. REQUIREMENT OF RUNAWAY PREVENTION DEVICE

4.1 Engine Starting

The runaway prevention device, when tested in accordance with 5.2, shall automatically prevent the vehicle from starting or moving at any speed controller position.

4.2 Normal & Unmanned Snowmobile Operation

The runaway prevention device, when tested in accordance with 5.3, shall automatically interrupt power to the track(s) on removal of operator's force from the throttle control with or without driver separation from the vehicle.

5. TEST PROCEDURE

5.1 Test Equipment and Instrumentation

An instrument to measure snowmobile ground speed of the track(s) with an accuracy of $\pm 10\%$

A means to support the rear of the snowmobile off the ground which will allow the track(s) to turn freely

5.1.1 A device or means of simulating the effects of malfunctions of the speed control systems, such that when the operator force to actuate the throttle control is released, it will not let the engine return to idle. Malfunctions examined will include speed controller mechanism binding or sticking that will not allow the speed controller to return to its idle position.

5.1.1.1 Malfunction of the speed controller shall be accomplished by blocking the butterfly, slide, etc. in a position that simulates a malfunctioning condition or

5.1.1.2 Malfunction of the throttle control or control cable assembly shall be accomplished by fixing the cable in a position that simulates a wide open condition.

NOTE: It is suggested that all likely malfunctions be tested and documented.

NOTE: With the skis resting on a flat surface, track coasting is acceptable if power is so low that the track will not continue moving when lowered to a ground surface.

5.1.2 Safety Warning

The tests described in 5.2 and 5.3 are hazardous and need to be made by personnel skilled in testing snowmobiles. Safety protection devices shall be used as required.

5.2 Starting Test

5.2.1 Support the rear of the snowmobile off the ground so the track(s) may rotate and restrain the vehicle to prevent potential runaway event.

5.2.2 Verify that the snowmobile is properly set up for normal operation and start engine using manufacturer's recommended starting procedure.

5.2.3 Advance the snowmobile speed controller to obtain a steady track speed greater than 16 km/h (10 mph). Retain the speed controller at this position by the means provided in 5.1.1.

5.2.4 Stop the engine

5.2.5 Attempt to start the engine and verify that:

5.2.5.1 The engine will not start or if it does

5.2.5.2 Power is not applied to the track(s).

NOTE: With the skis resting on a flat surface, track coasting is acceptable if power is so low that the track will not continue moving when lowered to a ground surface.

NOTE: Limp home mode (LHM) provides a mechanism to operate the vehicle at reduced engine power when a failure is detected in the speed controller system. Ensure limp home mode is not engaged during starting test.

5.3 Test for Normal Operation & Unmanned Operation

5.3.1 Verify that the snowmobile is properly set up for normal operation.

5.3.2 Support the rear of the snowmobile off the ground so the track(s) may rotate freely, and start the engine.

5.3.3 Operate the snowmobile throttle control through its full range of operation and verify that the snowmobile drive train is functioning properly.

5.3.4 Operate the snowmobile to achieve a speed of 48 km/h (30 mph) then install the device described in 5.1.1 which will retain the speed controller in the 48 km/h (30 mph) speed position.

5.3.5 Remove the operator's force from the throttle control or separate tether cord if so equipped from tether switch and verify that:

5.3.6 The power to the track(s) is automatically interrupted. The method used to verify the power to the track(s) has been interrupted shall be documented.

NOTE: With the skis resting on a flat surface, track coasting is acceptable if power is so low that the track will not continue moving when lowered to a ground surface.

NOTE: Limp home mode (LHM) provides a mechanism to operate the vehicle at reduced engine power when a failure is detected in the speed control system. Ensure limp home mode is not engaged during starting test.