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Speed Control Assurance for Snowmobiles

SAE Recommended Practice
Reaffirmed October 1984

an American National Standard

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SPECIALIZED VEHICLE PRACTICE

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SPEED CONTROL ASSURANCE FOR SNOWMOBILES

1. SCOPE: This recommended practice is intended to provide minimum requirement and performance criteria for devices intended to prevent snowmobile runaway due to malfunction of the speed control system.

2. DEFINITIONS:

2.1 Snowmobile: As defined in SAE Recommended Practice J33a, Definition for Snowmobiles - General.

2.2 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.

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

2.4 Speed Controller: Devices such as carburetors, fuel injection valves, etc., used to control the supply of energy (fuel) to the prime mover (engine-motor).

2.5 Speed Control System: A complete system used to control engine speed. This includes the throttle control, control linkage, control cable assembly, springs, and brackets necessary for operation of the system. Any attachment to the system that affects its mechanical operation, such as a warning light switch, safety switch, etc., shall be considered as part of the speed control system.

3. REQUIREMENT OF RUNAWAY PREVENTION DEVICE:

3.1 Engine Starting: The runaway prevention device, when tested in accordance with paragraph 4.2, shall automatically prevent the vehicle from moving at any speed controller position.

3.2 Normal Operation: The runaway prevention device, when tested in accordance with paragraph 4.3, shall automatically interrupt power to the track(s) from any speed controller position on removal of operator's force from the throttle control without removing either hand from the steering control.

3.3 Unmanned Snowmobile: The runaway prevention device, when tested in accordance with paragraph 4.4, shall automatically interrupt the power to the track(s) when the operator leaves the vehicle.

4. TEST PROCEDURE:

4.1 Test Equipment and Instrumentation:

4.1.1 An instrument to measure snowmobile ground speed of the track(s) with an accuracy of ±10% at 24 km/h (15 mph).

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

4.1.3 A level (±3% grade) test course of sufficient length to conduct the test. Any reasonable surface consisting of snow or turf will suffice.

4.1.4 A device or means of simulating the effects of malfunctions of the speed control system such that when the operator force to actuate the throttle control is released, it will not let the engine return to idle. Malfunctions will include, but are not limited to: speed controller sticking in an open position; throttle control or control cable assembly binding or sticking in conduit; or throttle control binding due to ice, friction, glove or mitten, or other foreign material that will not allow the speed controller to return to its idle position.

NOTE: It is suggested that validity of the simulation device be documented to assure accounting for malfunctions.

4.1.5 Safety Warning: Tests described in paragraphs 4.2, 4.3, and 4.4 are to be made by personnel skilled in testing snowmobiles. Safety protection devices shall be used as required.

4.2 Starting Test:

4.2.1 Support the rear of the snowmobile off the ground so the track(s) may rotate.

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

4.2.3 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 paragraph 4.1.4.

4.2.4 Stop the engine and deactivate the runaway prevention device.

4.2.5 Determine a starting procedure that allows the engine to start with the speed controller in the set position determined in paragraph 4.2.3 and verify that the track(s) turn(s) in excess of 16 km/h (10 mph).

4.2.6 Reactivate the runaway prevention device.

4.2.7 Using the starting procedure determined in paragraph 4.2.5, verify that:

4.2.7.1 The engine will not start with the runaway prevention device activated; or if it does,

4.2.7.2 Power is not applied to the track(s),

4.2.7.2.1 At the preset speed controller position and,

4.2.7.2.2 At the maximum speed controller position.

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 the floor.

4.3 Test for Normal Operation:

4.3.1 Verify that the snowmobile is properly set up for normal operation and start the engine.

4.3.2 Support the rear of the snowmobile off the ground so the track(s) may rotate freely.

4.3.3 While wearing winter snowmobile gloves, operate the snowmobile throttle control through its full range of operation and verify that the snowmobile drive train is functioning properly.

4.3.4 Install the device described in paragraph 4.1.4 whill will retain the speed controller in the maximum speed position. The engine may be stopped and restarted to perform this step.

4.3.5 Attempt to operate the throttle control through its full range of operation as in paragraph 4.3.3. Verify that:

4.3.5.1 The speed controller remains in its maximum speed position when the operator's force is removed from the throttle control.

4.3.5.2 The power to drive the track(s) is automatically interrupted within 1 s after the removal of the operator's force from the throttle control without the operator removing either hand from the steering control.

4.4 Unmanned Snowmobile Test:

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