

MaxxForce[®] 11 and 13 (2007-2009)

Overview: *Vehicle Speed Governor*

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General Overview: Vehicle Speed Limiter

The Vehicle Speed Limiter (VSL) feature limits the maximum speed that the vehicle can travel on a level road. This feature could be set to a blend of fuel economy or performance.

The document will address unique VSL functionality for the MaxxForce® 11 and 13.

Description and Operation

This feature limits the maximum vehicle speed controlled by the accelerator pedal. If your engine reaches a certain speed and feels like it should have more power to travel faster, you are probably traveling at the governed maximum speed limit.

Adjustable VSL

This feature is designed to temporarily reduce the maximum vehicle speed provided by VSL and provide a second vehicle speed limit to accommodate local speed limits. This might be useful for spreader applications and construction, etc. An additional operator switch is required.

The driver control of this feature consists of the accelerator pedal and the accelerator vehicle speed limit operator switch.

This feature is activated by the accelerator vehicle speed limit operator switch. Once the switch has been turned on, a new customer programmable vehicle speed limit is accepted as the maximum vehicle speed limit. In addition, the customer can program whether they want the current vehicle speed or a programmable vehicle speed to be the active vehicle speed limit once the accelerator vehicle speed limit switch is turned on.

Cruise control will be deactivated if it was active when the accelerator vehicle speed limiter switch is turned on. The new maximum vehicle speed limit can be adjusted in increments by “bumping” the cruise control set and resume switches until the accelerator vehicle speed limiter switch is turned off. Once the accelerator vehicle speed limiter switch is turned off, the maximum vehicle speed limit is selected from the normal vehicle speed limit provided by the VSL feature.

VSL Override

This feature raises the vehicle speed limit provided by the VSL feature to a customer programmable speed when the driver identifies a passing situation.

The driver control of the feature consists of the accelerator pedal.

The following text messages in the cluster may be used by this feature.

- **Active** – Indication which informs the operator that the accelerator vehicle speed limit is actively increased
- **Expiring** – Indication which informs the operator that the vehicle speed override is about to expire

To activate the VSL Override feature

Activate the VSL Override feature by double-pumping the accelerator foot pedal. This is done by starting at the full throttle position. Next, release the accelerator pedal completely and then return it back to full throttle, release it again and then return back to full throttle once again.

If successful, VSL Override is enabled. The message “Active” will appear. The double-pumping of the accelerator foot pedal should be started when the vehicle speed has reached the normal accelerator vehicle speed limit.

VSL override may work while cruise is enabled, but VSL override operation does not depend on cruise control.

After the vehicle speed is currently being maintained above the normal accelerator vehicle speed limit, if the vehicle speed drops below the normal accelerator vehicle speed limit, VSL override is automatically deactivated. The operator must repeat the double-pump action to reactivate the feature.

The operator may be warned by the “Expiring” message any time that the vehicle speed limit increase is about to expire.

Additional Information

Activating VSL override does not deactivate cruise control if it is on when the passing event begins. Once the vehicle has passed the other vehicles and VSL override has deactivated, the cruise control takes over again automatically.

The customer can program the duration of allowed vehicle speed limit increase. In addition, the customer can choose whether the duration is based on real time (if equipped with a real time clock) or based on engine hours.

VSL Anti-Tampering

This feature monitors the vehicle speed signal (VSS) input to the engine control module (ECM) to determine whether it is valid or if it has been tampered with.

The following conditions must be met before the feature will be active:

- Manual transmissions: Clutch pedal must be released
- Automatic Transmissions: Torque Converter must be locked
- All Transmissions: PTO must be disengaged

The engine will take measures (i.e. reduce engine power, limit engine speed, etc.) if it determines that the VSS input has been subjected to tampering. The maximum engine speed with a VSS fault is customer programmable.

Feature Interaction

Global VSL is the maximum vehicle speed. No features can increase this limit.

- Cruise Control Maximum VSL - This can be increased/decreased using driver reward/penalty
- Accelerator VSL - Can be influenced using driver reward, VSL override, and the accelerator vehicle speed limiter switch
- In gears lower than top gear, Gear Down Protection (GDP) or Progressive Shift will likely limit the vehicle speed less than the Global VSL setting

Programmable Parameters

The following programmable parameters are required for VSL operation. These parameters should be programmed to the operation which will best suit the vehicle conditions expected.

Parameters indicated as Customer Programmable can be adjusted differently than the production assembly plant setting to meet the customer's needs. If the parameter is indicated as non-customer programmable, the parameter setting is preset from the factory and can't be changed without authorization.

VSL Parameters

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
Max Vehicle Speed with Road Speed Limiting On (7902)	<p>This parameter sets the maximum accelerator controlled vehicle speed. The engine will not power the vehicle faster than this value. This parameter can be used to encourage driver behavior.</p> <p>For fuel economy, it is recommended to set parameter Max Vehicle Speed with Road Speed Limiting On (7902) less than both Cruise Control - Maximum Speed (7604, 7909) parameters.</p> <ul style="list-style-type: none"> For passing opportunities, it is recommended to set parameter (7902) higher than the Cruise Control - Maximum Speed (7909) parameter. The limits should be programmed as follows: $(7928 + 7902) > (7902 + 7912)$ <p>Note: (7928) is part of driver reward. Ignore this from the calculation if driver reward is not in the vehicle configuration.</p>	1 - 127 MPH	YES	Customer Chosen Note: Must be set to a value less than the Global Vehicle Speed Limit (7937) parameter setting.
Vehicle Speed Under Speed Limit (7904)	<p>This parameter sets the amount of vehicle speed allowed below the programmed vehicle speed limit, useful during uphill grades.</p> <p>Adjusting this parameter adjusts how tightly the engine tries to maintain the vehicle speed limit based on accelerator pedal demand. This parameter setting effects performance and fuel economy.</p>	1 to 10 MPH	YES	Customer Chosen Set between 1 & 4 (MPH) 1 = best performance 4 = best fuel economy
Road Speed Limiting - Vehicle Speed Over Speed Limit (7903)	<p>This parameter sets the amount of vehicle speed allowed above the programmed vehicle speed limit, useful during downhill grades.</p> <ul style="list-style-type: none"> Adjusting this parameter controls how tightly the engine tries to maintain the vehicle speed limit based on accelerator pedal demand. This parameter setting effects performance and fuel economy. 	1 to 10 MPH	YES	Customer Chosen Set between 1 & 4 (MPH) 1 = best performance 4 = best fuel economy
Road Speed Limiting Control Mode (7900)	This parameter is required to be set to 1.	0: Disable 1: Enable	YES	Must be set to 1

VSL Override Parameters

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
Vehicle Speed Limit Override (7911)	Set this parameter to Enabled to activate the Vehicle speed Limiter Override Feature.	0: Disabled 1: Enabled	YES	Customer Choice

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
VSLO Speed Increment (7912)	This parameter selects the amount of vehicle speed that is allowed above the Road Speed Limiting - Maximum Vehicle Speed (7902) when this feature is enabled. The limits should be programmed as follows: $(7928 + 7902) > (7902 + 7912)$ Note: (7928) is part of driver reward. Ignore this from the calculation if driver reward is not in the vehicle configuration.	1- 127 MPH	YES	5 MPH
VSLO Time Duration Source (7934)	This parameter selects whether the VSL Override Duration (7913) parameters is reset based on engine hours or real time clock time. Parameter (8911) must also be set to (1) and the vehicle must have a real time clock installed.	0: Engine Hours 1: SART NOTE: 0 setting (Engine Hours) will work for most applications. NOTE: "1" setting (SART) will work for fleets with driver rotations. Real time clock will run even when the engine is turned off.	YES	Customer Choice
VSLO Maximum Activation Time (7914)	This parameter selects the maximum amount of time that VSL Override feature can be used by the driver during the interval set by parameter Time Interval to Reset VSLO(7915).	0 - 1000 minutes	YES	30 minutes
Time Interval to Reset VSLO (7915)	This parameter selects the vehicle time interval after which the Vehicle Speed Limit Override Duration (7913) parameter is automatically reset and the feature is deactivated. Note: The time can be based on engine hours or real time clock hours.	0 - 24 hours	YES	8 hours

VSL Anti-Tampering Parameters

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
Engine Speed Limit with VSS Fault (7901)	This parameter sets the maximum engine speed allowed when an active vehicle speed sensor (VSS) fault exits and PTO engine speed control is not active. This parameter might be useful in preventing the operator from exceeding the Accelerator Vehicle Speed Limit (7902) parameter setting by tampering with the vehicle speed sensor.	700 to 5000 RPM	YES	Should be set to match the Accelerator Vehicle Speed Limit (7902) parameter setting
Vehicle Speed Anti - Tampering Enable (7905)	Set this parameter to Enable to activate vehicle speed limiter (VSL) anti - tampering.	0: Disabled 1: Enabled	NO	Program Support

Parameter Setup

This section briefly describes one example of VSL configuration and operation.

Please review the description and operation section and the programmable parameters for a better understanding of how the various VSL parameters might be best configured for your vehicle.

EXAMPLE A - VSL Configuration, with Adjustable VSL, VSL Override, and VSL Anti-Tampering

In this example, the customer requires vehicle speed limiter operation with a blend of fuel economy and performance. In addition, this particular customer requires adjustable VSL at 35 MPH, VSL Override increase of 5MPH, and Anti-Tampering functionality.

Adjust parameters as follows:

Parameter Name	Action Required
Max Vehicle Speed with Road Speed Limiting On (7902)	Set to 65 MPH
Vehicle Speed Under Speed Limit (7904)	Set to 4 MPH
Vehicle Speed Over Speed Limit (7903)	Set to 4 MPH
Road Speed Limiting Control Mode (7900)	Set to 1
Vehicle Speed Limit Override (7911)	Set to 1
VSLO Speed Increment (7912)	Set to 5 MPH
VSLO Maximum Activation Time (7914)	Set to 30 minutes
Road Speed Limiting - Vehicle Speed Limit Override Time Duration Source (7934)	Set to 0
Time Interval to Reset VSLO (7915)	Set to 8 hours
Engine Speed Limit with VSS Fault (7901)	Set to 65 MPH
Vehicle Speed Anti - Tampering Enable (7905)	Set to 1

Frequently Asked Questions

Can the Vehicle Speed Limiter feature be configured to help the vehicle perform better during an uphill grade?

Yes, depending on whether fuel economy or performance is desired during uphill grades, the Road Speed Limiting - Vehicle Speed Under Speed Limit (7904) parameter can be set to meet the customer's needs.

- Setting this parameter to a lower value will more aggressively track the programmed accelerator vehicle speed limit parameter setting. This increases performance and decreases fuel economy.
- Setting this parameter to a higher value will allow the vehicle speed to drop below the programmed accelerator vehicle speed limit parameter setting. This reduces the time that the engine spends at maximum fueling and therefore improves fuel economy.

Definitions/Acronyms

The following terms are referenced in this document:

Acronym	Definition
ECM	Engine Control Module
GDP	Gear Down Protection
VSL	Vehicle Speed Limiter
VSS	Vehicle Speed Sensor