

DETROIT DIESEL PasSmart™

ELECTRONICALLY-CONTROLLED INCREASED PASSING SPEED

What is PasSmart?

Detroit Diesel PasSmart is an electronic strategy in DDEC IV & V ECMs (Release 28.00 or higher). It allows a driver to have a second vehicle speed limit (VSL) above the normal VSL to assist while passing other vehicles on the highway. This second VSL is programmed for a limited duration during a given time period.

For example, if the normal fleet speed limit is 65 MPH, the fleet manager can increase the VSL an additional 5 MPH for up to 30 minutes each day with a reset interval of 8 hours. Each time the driver exceeds 65 MPH, the 30 minute clock counts down as long as the speed remains above 65 MPH. He or she can continue to enter and exit the PasSmart extra speed zone to pass vehicles until the entire 30 minutes of higher VSL is used up. The driver is warned by the Check Engine Lamp (CEL) one minute before the time expires. The vehicle speed is then limited to 65 MPH until the 8 hour period expires and an additional 30 minutes of passing time is available.

The fleet manager controls the set-up for this feature and administers the training and use of it. Password protection for the setup is available to prevent unauthorized personnel from changing the settings.

What is the advantage of PasSmart?

Consider this situation: one truck with a slightly higher road speed limit attempts to pass another with a slightly lower road speed limit on a two-lane highway. Traffic backs up behind both vehicles creating an uncomfortable situation for the passing driver. Until now the only way to avoid this situation was to set the road speed limit with a reasonable top passing speed in mind. However, setting the road speed limit to top passing speed reduces overall fuel economy and results in higher operating costs. PasSmart gives the fleet manager the ability to provide drivers the speed they need in certain situations while still maintaining a fuel efficient, overall road speed limit.

How is PasSmart turned on and set up?

PasSmart comes from the factory enabled but set to zero, and the ECM must be recalibrated to turn it on. Three ECM parameters must be changed for PasSmart to operate. They are explained in the following table:

Parameter	Description	Range	Notes
Passing Speed Increment	The vehicle speed increase over the normal VSL.	0 to 20 MPH (0 to 32 km/h)	Select 0 to disable PasSmart.
Passing Speed Reset Interval	The period in which the feature resets to begin a new interval.	1 to 24 hours	If an 8, 12, or 24 hour interval is selected, the interval will always reset at midnight. Otherwise it resets every Reset Interval after the reprogramming was done.
Passing Speed Duration	The length of time during the Passing Speed Reset Interval the speed increment is available.	0 to 255 minutes	Select 0 to disable PasSmart.

PasSmart parameters are programmable when the engine order is entered. They may also be changed once the engine has been shipped from DDC. The tools used in the field to set-up the DDEC ECM for PasSmart are:

- Vehicle Electronic Programming System (VEPS) in the truck manufacturing plant
- The Distributor Reprogramming Station (DRS) software release 28
- Detroit Diesel Diagnostic Link (DDDL) 3.0 or higher

When using DDDL, retrieve the calibration from the ECM, choose the Speed Limit tab and set the three parameters to the desired values, enter the passwords for the ECM, and transmit the changes to the ECM. The settings can be password protected to prevent unauthorized personnel from changing them. The vehicle is now set up.

How Does the Driver Use PasSmart?

The driver activates PasSmart by double-pumping the throttle foot pedal. Starting at the full throttle position, the driver releases the throttle completely, returns the throttle to the full throttle position, releases it again and then returns to full throttle. If the driver completes this action within 5 seconds, PasSmart is activated.

After double-pumping the foot pedal, the vehicle is given 20 seconds to accelerate to a speed above the normal VSL limit. If the vehicle speed does not exceed the normal VSL speed in 20 seconds, the driver must repeat the double-pump action. Once the normal VSL has been exceeded, a new higher VSL becomes the maximum vehicle speed limit. This limit is the normal VSL plus the Passing Speed Increment.

A passing speed duration timer starts when vehicle speed exceeds the normal VSL limit and continues to count until the vehicle speed drops back below the normal VSL speed. At the end of the passing event when the vehicle speed drops back below the normal VSL, PasSmart is automatically deactivated and the driver cannot exceed the normal VSL unless the foot pedal is double-pumped again.

PasSmart operates only with the foot pedal and not with the cruise control switches or hand throttle. However, activating PasSmart does not disturb or deactivate cruise control if it is on when the passing event begins. Once the driver has passed the other vehicles and PasSmart has deactivated, cruise control takes over again automatically. To deactivate cruise control during the pass, the driver must turn the cruise control switch to off.

How does the driver know when PasSmart expires?

When the Passing Speed Duration time expires, the Check Engine Lamp on the dashboard will begin to flash one minute prior to ramping the VSL limit back down to the normal VSL limit. The ramp down event always takes 5 seconds regardless of the Passing Speed Increment programmed into the ECM. The ramp down alert can be distinguished from an engine fault warning in that the Check Engine Lamp flashes for the PasSmart alert and remains on constantly for an engine fault.

If intervals of 8, 12, or 24 hours are selected, the interval will always reset after the chosen interval and at midnight. This allows fleets to synchronize the reset with driver change periods. All other intervals reset from the time they are selected. For example, if you select 4 hours, then a reset will occur every 4 hours from the time of programming but not necessarily at midnight.

Does PasSmart operate when there is an active DDEC system fault?

PasSmart still operates when there is an active (non-shutdown) system fault. In this situation the Check Engine Lamp goes from constant illumination to flashing one minute before the VSL limit ramps down. At the end of the passing event when PasSmart is deactivated, the Check Engine Lamp will return to constant illumination if the fault is still active.

If there is an active stop engine fault, the rampdown / shutdown activity overrides PasSmart. The additional passing speed is not available until the fault is cleared.

Does coasting downhill use up PasSmart time?

No, not if the driver has not activated PasSmart by double-pumping the accelerator pedal. If the driver double-pumps the throttle to make PasSmart active, any time spent above the original VSL (even if it exceeds the PasSmart higher VSL) will count down the timer.

Can a vehicle be set up with both PasSmart and Fuel Economy Incentive?

Yes, you can set up a vehicle for both, but the extra speed increments provided by the two features do not add together. For example, you set up Fuel Economy Incentive to give 7 MPH of extra speed when the driver hits the maximum fuel economy target. You also give the same vehicle a 5 MPH PasSmart increase. The resulting speed increase is 7 MPH, not 12 MPH.