

Network Input Messages - PCM

Broadcast Message	Originating Module	Message Purpose
Cruise control button status	CCM	Used for cruise control enable/disable and operating mode request.
Steering wheel switch speed control	SCCM	Used for cruise control enable/disable and operating mode request.
Stability control event in progress	ABS module	Deactivates speed control when requested.
Traction control event in progress		
Vehicle yaw rate		
Vehicle lateral acceleration	RCM	Deactivates speed control when requested.
Vehicle longitudinal acceleration		

DESCRIPTION AND OPERATION > CRUISE CONTROL - SYSTEM OPERATION AND COMPONENT DESCRIPTION > CRUISE CONTROL OPERATION



NOTE: For a complete illustration of the adaptive cruise control indicators and graphic displays, refer to the Owner's Literature.

The adaptive cruise control system functions much like a standard cruise control system. The adaptive cruise control system automatically adjusts the vehicle speed to maintain a set distance gap from the front of the vehicle and the vehicle in the same path of travel. When the adaptive cruise control system is on and is following a vehicle or a vehicle enters the same driving lane, a follow vehicle graphic is displayed in the message center.

The adaptive cruise control system does not function if the vehicle speed is below 20 km/h (12 mph). As the vehicle slows down during automatic braking, the adaptive cruise control system discontinues braking at 20 km/h (12 mph). At that speed, an audible alarm sounds and the automatic braking from the ABS module is released. The driver must take over the vehicle braking control.

The cruise control deactivator switch (which is integral to the BPP switch) is an additional safety feature. When the brake pedal is pressed, an electrical signal is sent from the BPP switch to the PCM deactivating the cruise control system. Under increased brake pedal effort, the cruise control system deactivator switch opens and removes the ground signal from the PCM input circuit, releasing the throttle and immediately deactivating the system.

The CCM monitors the yaw rate signal from the ABS module and compares it to the wheel speed and steering wheel angle signals. If the ABS module determines the yaw rate is invalid, the CCM disables the adaptive cruise control. The message center displays the message COLLISION WARNING MALFUNCTION and/or ADAPTIVE CRUISE MALFUNCTION.

The CCM monitors the environment in front of the vehicle while active. If the radar beam is obstructed by

a buildup of snow, ice, rain or other debris, or the vehicle is driven in a desert environment with no other traffic for extended periods of time, the sensor will trigger an ADAPTIVE CRUISE NOT AVAILABLE SENSOR BLOCKED SEE MANUAL message and will disable the adaptive cruise control. The adaptive cruise control will resume once the obstruction is cleared and the radar is able to detect targets, or upon a key cycle.

If aftermarket equipment, such as a snow plow, is installed on the front of the vehicle, obstructing the radar, the adaptive cruise control may function erratically. The adaptive cruise control will need to be disengaged using the menu option, and the operator will only have non-adaptive cruise control functionality. Other aftermarket equipment such as bumpers, brushguards and lights mounted in front of the radar module can also impede system performance.

The ABS module estimates brake temperature by monitoring applied brake pressure over a period of time and sends a message to the CCM when the estimated temperature is above a given threshold. An alarm sounds and the adaptive cruise control system is deactivated until the estimated brake temperature returns to cooler operating conditions. This condition can happen in a hilly or mountainous driving terrain.

Cruise Control Indicator

The adaptive cruise control indicator located in the IPC illuminates in gray and the previous gap setting and SET graphic is displayed indicating the system is in standby mode. This notifies the driver the system is ready and the vehicle can be accelerated to the desired speed. When the vehicle reaches the desired speed and the SET+ is pressed, the adaptive cruise control indicator illuminates in green.

Steering Wheel Switch Function

The adaptive cruise control steering wheel mounted switches are momentary contact switches that toggle up and down for the cruise control switch state. Pressing and releasing the steering wheel cruise control ON/OFF switch turns the cruise control system on. Pressing up (SET+) and releasing the SET switch sets the vehicle's speed and stores the set speed in memory. The adaptive cruise control indicator illuminates and the message center displays the set speed and gap setting graphic.

There are 2 ways to change the set speed. The first way is to accelerate or brake to the desired speed and press and release the SET cruise control switch until the desired set speed is shown on the message center. The second way is by tapping the SET+ or the SET- switch while in the set mode, increasing or decreasing the displayed set speed by 1.6 km/h (1 mph) per tap. If the respective button is pressed and held, the displayed set speed continues to increase or decrease until the button is released. The adaptive cruise control system may apply the brakes to slow the vehicle down to the new set speed. The set speed displays continuously in the message center while the adaptive cruise control system is active.

Pressing and releasing the OFF switch, or switching the ignition to OFF, turns the adaptive cruise control system off. The adaptive cruise control set speed memory is erased.

Pressing the brake pedal or pressing the CNCL switch puts the adaptive cruise control system in standby mode and the last set speed is displayed in the message center with a strike through. Pressing the RES button when the adaptive cruise control system is in standby mode causes the vehicle to accelerate to the last set speed. The set speed continuously displays in the message center while the adaptive cruise control system is active. The RES button does not function if the OFF button is pressed, the ignition is cycled OFF, or if the current vehicle speed is below the minimum operational speed.

The adaptive cruise control system has the capability for the driver to change from adaptive cruise control to standard cruise control. The LH 5-way steering wheel switch is used to switch from the adaptive cruise control system to standard cruise control system within the message center. For

information on selecting the standard cruise control in the message center, refer to Owner's Literature. Once the driver has selected the standard cruise control in the message center, the adaptive cruise control indicator is replaced by the standard cruise control indicator. The vehicle no longer responds to lead vehicles or automatic braking. Upon the next vehicle ignition cycle, the vehicle defaults back to the adaptive cruise control system.

Gap Setting

When a vehicle ahead enters the same lane or a slower vehicle is ahead in the same lane, the vehicle speed adjusts automatically to maintain a preset distance gap. A bar graph graphic with 4 preset distance gap settings are displayed in the message center. Pressing up (decrease) or down (increase) on the steering wheel cruise control gap switch increases or decreases the distance from the vehicle ahead. If all of the bars are illuminated, this is the longest gap setting. If only one bar is illuminated, that is the shortest gap setting.

The vehicle maintains the distance gap to the vehicle ahead until:

- the vehicle ahead accelerates to a speed above the set speed.
- the vehicle ahead moves out of the lane or out of view.
- the vehicle speed falls below 20 km/h (12 mph).
- a new gap distance is set.

After each ignition cycle, the previous gap setting is remembered and the system is set to that gap setting.

The distance gap can be overridden by pressing the accelerator pedal. The follow vehicle graphic is not displayed in the message center and the green indicator illuminates. When the accelerator pedal is released, the adaptive cruise control system returns to normal operation and the vehicle speed decreases to the set speed or a lower speed if following a vehicle ahead.

Deceleration Control

The CCM commands the ABS module, which controls the brakes, to automatically apply the brakes to slow the vehicle to maintain a safe distance to the vehicle in front.

Steering Wheel Switches

The cruise control steering wheel mounted switches are momentary contact switches that toggle up and down for the switch state. The switches are an input to the SCCM.

Brake Switch

When the brake pedal is applied, the cruise control deactivator switch, integrated in the BPP switch, opens and removes the ground signal from the PCM input circuit releasing the throttle, immediately deactivating the cruise control system.

Cruise Control Module (C-CM)

The CCM contains a radar sensing unit which measures the relative speed and the distance between the front of the vehicle and the vehicle being followed. The CCM is responsible for requesting the PCM to increase vehicle speed and the ABS module to brake, when necessary.