International® S13 Integrated (2024)

Overview: *Cruise Control with T14 Transmission*

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General Overview: Cruise Control

Programming to support this feature is accomplished within the engine control module (CEM1), the powertrain interface module (PIM) and the transmission control (TCM).

Basic Cruise Control

The Basic Cruise Control feature controls vehicle speed. Cruise Control offers driving comfort by providing a method for the operator to set and maintain a constant vehicle speed without using the accelerator pedal. This is especially useful when the operator is required to operate vehicle at a constant speed.

Advanced Cruise Control

Adaptive Cruise Control (ACC) is an available option that integrates within the normal Cruise Control system. Adaptive Cruise Control allows the cruise control to maintain a safe vehicle following distance on the highway by controlling engine speed, engine brake, and vehicle brakes. This allows the operator to utilize the Cruise Control system for longer periods of time achieving an increase in fuel economy.

Predictive Cruise Control (PCC) – If equipped with this feature, programmed in the transmission as CCAP, the PCC system works with the normal cruise control system and enhances it by using road map data to calculate the desired vehicle speed based on specific terrain. PCC is automatically activated when cruise control is activated. The PCC system provides improved fuel economy over the normal cruise control.

Neutral Coast aka Eco Roll– The Neutral Coast/Eco Roll feature will only function while Basic Cruise Control is enabled and controlling vehicle speed. If equipped with this feature, the vehicle may descend some hills, in the neutral gear, in an effort to minimize fuel consumption. The transmission will automatically shift between the current drive gear and neutral gear to enter and exit the Neutral Coast feature, as necessary. With this feature enabled, active, and with the transmission in Neutral gear, the engine will simply run at low idle.

This document will address the unique Basic Cruise Control and Advanced Cruise Control functionality for the International® S13 engine and T14 transmission.

The S13 engine has 2 modules with programmable parameters that interact to provide desired engine functions. The service diagnostic solutions (SDS) software is used to program these modules. The powertrain interface module (PIM) stores most of the customer programmable parameters. The engine controller (CEM1) has a few parameters that are customer programmable.

The T14 transmission also stores customer programmable parameters and interacts with the CEM1. The service diagnostic solutions (SDS) software is also used to program the transmission control module.

Description and Operation

Operation

> *NOTE: Refer to the vehicle operation and maintenance manual, as well as the S13 engine operation and maintenance manual, for additional information on operation and indications.*

Cruise On, Off, Set, Resume and Cancel switch configurations vary between different vehicle models.

Refer to the applicable Operator's Manual to find detailed information on the Cruise Switch operation, for the vehicle in question.

> *SET/COAST is labeled SET/CRUISE on some models; however, SET/COAST will be used in this document.*

> *These same controls (RES and SET) are also used for the in cab auxiliary engine speed control (AESC). Therefore, commands from the selector may become part of AESC if the vehicle is traveling at lower speeds and conditions are appropriate for AESC operation. See the AESC feature documents for further details.*

To activate cruise control

- The cruise enable switch (CRUISE ON) must have been pressed in trucks equipped with the steering wheel cruise switches. On the trucks with dash mounted switches, the on/off switch must change from off to on. The cruise will not activate, if the truck was started with the cruise switch in the on position, without switching it to off first.

- Vehicle speed should be above the Minimum Cruise Control Speed parameter setting and below the Maximum Cruise Control Speed parameter setting.

To set cruise control

- With cruise activated, accelerate to the desired vehicle speed.

NOTE- Failure to operate the cruise enable switch properly or pressing the switch too long will prevent cruise ON operation.

- Momentarily press and release the SET button to select the current vehicle speed as the Cruise Control set speed.

To increase or decrease cruising speed

- Press and hold RES to accelerate the vehicle and increase the current Cruise Control set speed.

- Press and hold SET to decelerate the vehicle and decrease the current cruise control set speed.

- Momentarily bump RES to incrementally increase the Cruise Control set speed.

- Momentarily bump SET to incrementally decrease the Cruise Control set speed.

To deactivate cruise control

- Press the service brake or clutch pedal.

- Press CANCEL button, if applicable.

To resume cruise control

- Momentarily press and release RES to reactivate Cruise Control to the previous set speed.

  NOTE – The cruise must be enabled or have been previously active.

To disable cruise control

Press CRUISE OFF button.

> *The Cruise Control system should never be used on roads where you cannot drive safely at a steady speed, including city streets, winding roads and sharp curves, downhill grades, poor road conditions, such as gravel, dirt, ice or wet surfaces (wet surfaces may increase the risk of hydroplaning), or in fog, heavy rain or snowy conditions. These conditions may cause wheel slippage and loss of vehicle control, resulting in property damage, personal injury or death. Consult the Vehicle Operator's Manual for applicable details regarding use and operation.*

Adaptive Cruise Control Functions (if equipped)

Note: If the truck comes equipped with systems below, please refer to user guide provided.

Bendix Wingman Advanced

Bendix Wingman Fusion 2.3

Bendix Wingman Fusion 3.0

Wabco OnGuard Active

Wabco OnGuard Max

Adaptive Cruise Control Operation

Adaptive Cruise Control is an integrated combination of these features:

- ACC with braking (engine or vehicle brakes)
- Alerts

The ACC feature includes the following components:

- Driver Interface Unit (DIU)

- Radar sensor

Adaptive Cruise Control with Braking

When cruise control is set, and the system is maintaining a set following distance between the ACC equipped vehicle and the forward vehicle:

- If the forward vehicle slows down below cruise control set speed, the system should intervene, as necessary, in this order:

    1. Reduce the engine speed.

    2. Apply the engine brake.

    3. Apply the vehicle brakes.

- If the forward vehicle slows below cruise control set speed, but then accelerates and the ACC system did not use the vehicle brakes, the system will automatically accelerate back to the original cruise control set speed, and again maintain a set following distance behind the forward vehicle.

> *Adaptive Cruise Control operates along with normal cruise control; all typical features associated with cruise control will continue to operate properly. Parameters set for cruise control operation are fully supported by the ACC feature.*

Alerts

Adaptive Cruise Control provides the operator with audible and visual alerts regardless of cruise control state.

Predictive Cruise Control (PCC)/(CCAP) Functions (if equipped)

The International PCC/CCAP system works with the normal cruise control system and enhances it by using road map data to calculate the desired vehicle speed based on specific terrain. PCC is automatically activated when cruise control is activated. The PCC system provides improved fuel economy over the normal cruise control.

Refer to the vehicle Operation and Maintenance Manual for more details.

The majority of the (PCC)/(CCAP) Programming is done in the T14 G6 TCM.

Cruise Control Feature Interaction

Cruise Control feature interacts with the following engine features:

- AESC– There is no direct interaction with In Cab AESC, but it is important to understand that Cruise Control and In Cab AESC use the same switches. Refer to the Engine Speed - In Cab feature document for more information.

- Cruise Control and Accelerator Pedals – The Maximum Cruise Control Speed and the Accelerator Vehicle Speed Limit parameters can be set independently to influence driver behavior.

- Engine Brake – The engine brake functionality related to Cruise Control is described in the Engine Brake features document.

- Gear Down Protection (GDP) – GDP may limit Vehicle speed, depending upon operating conditions. Refer to the GDP feature document for more information.

- Progressive shift feature – Cruise Control speed settings may be affected by the Progressive shift feature. Refer to the Progressive shift feature document for more information.

- Neutral Coast/Eco Roll – With this feature enabled and active, the transmission will open the clutch and the engine will run at low idle.

Programmable Parameters

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 cannot be changed without dealer authorization.

All parameters are programmed in the PIM unless identified otherwise.

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
Cruise Control Enable (CCE) (B101 000)	Select this parameter to switch ON or OFF the cruise control feature.	- Disable - Enable	Engineering	Enabled
Cruise Control Resume/Accelerate Switch Input Selection (CCRASIS) (B101 107)	This parameter determines which inputs are used for the Resume/Accelerate Switch Input	- Use Hardwired Input - Use CAN Input 1 - Both	YES	Both
Cruise Control Set/Coast Switch Input Selection (CCSCSIS) (B101 106)	This parameter determines which inputs are used for the Set/Coast Switch Input	- Use Hardwired Input - Use CAN Input 1 - Both	YES	Both
Cruise Control Vehicle Speed Range Low Limit (CCVSRLL) (B120 001)	This parameter sets the lowest vehicle speed at which the Cruise Control feature may remain active or be activated.	0 to 100 mph	YES	Customer Chosen
Cruise Control Vehicle Speed Range	This parameter sets the highest vehicle speed at which the Cruise Control feature may remain active or be activated.	43.5 to 127 mph	YES	Customer Chosen

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
High Limit (CCVSRHL) (B101 002)				
Cruise Control Droop (CCD) (B101 003)	Maximum amount Cruise Control speed set point will reduce when going uphill before full torque is commanded.	0.00 to 4.00 by 0.01 mph	Engineering	3
Cruise Control Bump Up/Down Step (CCBUDS) (B101 004)	This parameter sets the value used to increment or decrement the Cruise Control Set Speed.	1 to 10 mph	YES	1 mph
Vehicle Retarder Mode (VRM) (B103 000)	This parameter sets the mode of operation for the Engine Brake.	- Disable - Service Brake Latched - Coast - Latched - Smart Latched	YES	Customer chosen
Retarder will Pause Cruise (RPC) (B121 002)	This parameter determines if the cruise control is paused during engine brake activation	- Disabled - Enabled	YES	
Cruise Control Engine Brake Activation Enable (CCEBAE) (B103 003)	**(Optional Feature)** This parameter enables the cruise control related Engine Brake functionality.	- Disabled - Enabled	YES	Enabled
Cruise Control Engine Brake Activation Percent (CCEBAP) (B103 006)	**(Optional Feature)** This parameter sets the activation percent (%) that the engine brake feature starts at the Cruise Control Engine Retarder Low Speed (A804 000) parameter setting. Vaidas says this is no longer available. Still shows in SDS	0 to 100%	YES	35%
T14 G6 Eco Roll Enable (D017 000)	Enable Eco-roll, i.e. the vehicle will coast in neutral when suitable, from a fuel consumption perspective.	- Not set - Disabled - Enabled on cruise control - Enabled on cruise control - Enabled on cruise control and accelerator pedal	Engineering	Disabled

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
Adaptive Cruise Control Enable (ACCE) (B102 000)	**(Optional Feature)** This parameter sets the mode of operation for the Adaptive Cruise Control	- Disabled - Enabled	Engineering	Enabled
T14 G6 Predictive Cruise Control Down Hill Speed Control Momentum Offset (CCCAPSO) (D073 000)	Allowed momentum offset form DHSC-speed	0 -11 MPH	YES	0
PCC Maximum Positive Offset (PCCMPO) (B103 00B)	Predictive cruise control vehicle speed is allowed to this amount above Cruise control set speed.	0 – 5 Mph	YES	Customer chosen
T14 G6 CCAPPositiveSpeed Offset (PSO) (D082 000)	Allowed positive PCC speed offset for performance mode balanced, item 0.	0 -10 MPH	YES	Customer Chosen
T14 G6 PCC Max Speed Offset Item 0 (MSO) (D082 001)	Maximum Positive PCC speed offset for performance mode economy, item 1.	0 -10 MPH	YES	Customer Chosen
T14 G6 PCC Max Speed Offset item 1 (MSO) (D082 002)	Maximum Positive PCC speed offset for performance mode economy, item 2.	0 -10 MPH	YES	Customer Chosen
T14 G6 PCC Max Speed Offset item 2 (MSO) (D082 003)	Maximum Positive PCC speed offset for performance mode economy, item 3.	0 -10 MPH	YES	Customer Chosen
T14 G6 PCC Minimum Speed Offset Item 0 (D083 000)	Maximum positive PCC speed offset for performace mode balanced, item 0.		YES	Customer Chosen
T14 G6 PCC Minimum Speed Offset Item 1 (MSO) (D083 001)	Minimum Positive PCC speed offset for performance mode economy, item 1.	0 -10 MPH	YES	Customer Chosen
T14 G6 PCC Minimum Speed Offset Item 2 (D083 002)	Maximum positive PCC speed offset for performace mode balanced, item 2.		YES	Customer Chosen
T14 G6 PCC Minimum Speed Offset Item 3 (MSO) (D083 003)	Minimum Positive PCC speed offset for performance mode economy, item 3.	0 -10 MPH	YES	Customer Chosen

Parameter Setup

Cruise Control Application

This section describes one feature application and how the programmable parameters can be effectively configured for this application. This is not a comprehensive list and should not include all possible applications that an owner/operator might encounter.

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

Cruise Control Example

Set programmable parameters to the values shown in the table below:

Parameter Name	Action Required
Cruise Control Enable (CCE) (B101 000)	Set to (ON)
Cruise Control Vehicle Speed Range Low Limit (CCVSRLL) (B101 000)	Set to 30 mph
Cruise Control Vehicle Speed Range High Limit (CCVSRHL) (B101 002)	Set to 75 mph
Cruise Control Bump Up/Down Step (CCBUDS) (B101 004)	Set to 1 mph

Cruise Control Engine Retarder Example

Set programmable parameters to the values shown in the table below:

Parameter Name	Action Required
Cruise Control Enable (CCE) (B101 000)	Set to 1 (ON)
Cruise Control Vehicle Speed Range Low Limit (CCVSRLL) (B101 000)	Set to 30 mph
Cruise Control Vehicle Speed Range High Limit (CCVSRHL) (B101 002)	Set to 75 mph
Cruise Control Bump Up/Down Step (CCBUDS) (B101 004)	Set to 1 mph
Cruise Control Engine Brake Activation Enable (CCEBAE)(B103 003)	Set to 1 (ON)
Cruise Control Engine Brake Activation Percent (CCEBAP) (B103 006) Vaidas says this is no longer available. Still shows in SDS	Set to 50%
In this example the cruise control is set at 65 MPH. The Engine Brake will function at 50% application when the vehicle cruise speed has reached 68 MPH. When the vehicle cruise speed has reached 70 MPH, the Engine Brake will then operate at 100% application.	

Frequently Asked Questions

Can the S13 Engine Brake feature be used to help Cruise Control maintain the vehicle speed?

Yes, the Cruise Control automatic engine brake feature engages the S13 Engine Brake at a programmable speed, when enabled, in the programming. This allows for better speed control and can reduce vehicle brake system wear. The engine brake On/Off switch and engine brake setting switch can be configured, through programmable parameters, to disable the cruise control retarder request or can be configured to ignore the retarder switches and allow the retarder to activate in cruise, regardless of the retarder switch positions. Refer to the S13 Engine Brake feature document for more information.

Definitions/Acronyms

The following terms are referenced in this document:

Acronym	Definition
ACC	Adaptive Cruise Control
CCAP	Cruise Control with Active Prediction – Same as PCC
DHSC	Downhill Slope Control
DIU	Driver Interface Unit
APS	Accelerator Pedal Position Sensor
AESC	Auxiliary Engine Speed Control
PCC	Predictive Cruise Control
PIM	Powertrain Interface Module