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1. Cruise Control – (including Adaptive Cruise Control) (General Overview)

Cruise Control is a well known feature that offers driving comfort by providing a method for an operator to set and maintain a constant vehicle speed without using the accelerator pedal. It is especially useful when the operator is required to drive on highways at a constant speed for many miles.

Adaptive Cruise Control is an available option as an integrated system within the normal cruise control system. This system may provide operational benefits for your fleet. Adaptive Cruise Control could allow the driver to utilize the cruise control system for longer periods of time with a possible increase in fuel economy.

- **For additional benefits of the Bendix® Wingman® Adaptive Cruise Control systems please see the Bendix® website.**

Programmable parameters within the engine control module (ECM) provide cruise control related options that can be adjusted to suit the customer’s needs. Choosing how tightly the engine tries to maintain the cruise control set speed is an example.

The cruise control feature allows the cruise control set speed to be maintained in the ECM’s memory. Additional programming flexibility is included to allow a tradeoff to be made between performance and fuel economy.

The document will address unique cruise control functionality and the Adaptive Cruise Control systems for MaxxForce® 11 and 13 engines. To set up the cruise control feature it is recommended that you use one of the example settings, referenced in the “Parameter Setup” section, and then modify only the specific parameters that will help meet your vehicle application.

WARNING! – Do not use the cruise control system when unpredictable driving conditions are present. Such conditions include heavy traffic, roads that are winding, icy, snow covered, slippery, or with a loose surface. These conditions may cause wheel slippage and loss of vehicle control, resulting in property damage, personal injury or death.

WARNING! - Improper use of the Cruise Control system can result in a collision causing property damage, serious injuries, or death. Be sure to read, understand, and follow all operating instructions carefully.

1.1. Feature Codes

- 08TKY - Bendix® Wingman® ACB
- 04AZS - Bendix® ESP® Full Stability System
- 08TSB - Bendix® Blindspotter® Side Radar Sensor

2. Definitions/Acronyms

The following terms are referenced in this document:

- **CC** – Cruise Control
- **ECM** – Engine Control Module
- **PTO** – Power Take Off
- **VSS** – Vehicle Speed Sensor

3. Description and Operation

3.1. Operation – Cruise Control System

Cruise Control Functions:

The 4 main cruise control functions are “SET”, “RESUME”, “ACCEL” and “COAST”. These are explained further below.

Since there are only 2 buttons for 4 cruise control functions, the buttons have different functions depending if the button is momentarily pressed or if the button is pressed and held.

NOTE: The interlocks for cruise control activation must first be met before these functions can be used.

The driver control of the cruise control feature consists of two controls:

- “CRUISE ON/OFF” which allows the driver to enable the system or disable the system.
- “RESUME/ACCEL” and “SET/COAST” which allows the operator to increase or decrease the vehicle speed set point.

Note 1: “SET/COAST” is labeled “SET/CRUISE” on some models; however, we will refer to the “SET/COAST” in this document.

Note 2: These same controls (“RESUME/ACCEL” and “SET/COAST”) are also used for the engine speed control (PTO) feature; therefore, commands from the switches may become part of PTO if the vehicle is traveling at lower speeds and conditions are appropriate for PTO operation.

The following visual indications are used for cruise control:

- The “CRUISE ON” switch LED indicator turns ON and the “CRUISE” text message appears in the gauge cluster when the enable switch is pressed.
- The “CRUISE SET” text message appears in the gauge cluster when cruise control is active and engaged.

To activate cruise control:

- Cab mounted cruise enable switch (“CRUISE ON” switch) must be set to “ON”.
- Vehicle speed must be above the “Minimum Cruise Control Speed” (7603) parameter setting and below the “Maximum Cruise Control Speed” (7604, 7909) parameter setting.

To engage cruise control:

- With cruise enable switch set to “CRUISE ON”, accelerate to the desired vehicle speed.
- Press and release “SET/COAST” while the vehicle speed is within the acceptable range.
- Release the accelerator pedal.

To deactivate cruise control:

- Press the service brake or clutch pedal.
- Press “CRUISE OFF”.

3.1.1. SET

Momentarily press and release “SET/COAST” to select the current vehicle speed as the cruise control set speed.

3.1.2. RESUME

Momentarily press and release “RESUME/ACCEL” to reactivate cruise control to the previous set speed when cruise control is enabled but disengaged.

Increase the cruise control set speed incrementally by bumping “RESUME/ACCEL” momentarily while cruise control is engaged. The set speed will increase by 1 mph (customer programmable).

3.1.3. ACCEL

Press and hold “RESUME/ACCEL” to accelerate the vehicle and increase the current cruise control set speed. While the input is pressed and held, the engine will attempt to accelerate the vehicle gradually until the input is released at which time the current vehicle speed will become the cruise control set speed.

Decrease the cruise control set speed incrementally by bumping “SET/COAST” momentarily while cruise control is engaged. The set speed will decrease by 1 mph (customer programmable).

3.1.1. COAST

Press and hold “SET/COAST” to decelerate the vehicle and decrease the current cruise control set speed. While the input is pressed and held, the engine will allow the vehicle to decelerate until the input is released at which time the current vehicle speed will become the cruise control set speed.

3.2. Operation – Adaptive Cruise Control System

Adaptive Cruise Control Functions:

The Adaptive Cruise Control system engages automatically when the driver switches on the cruise control system and sets a cruise control speed. Drivers will receive unique audible and visual alerts of impending forward roadway vehicle hazards from the integrated in-dash adaptive cruise control display. The Adaptive Cruise Control system is available as an option that will smoothly integrate into the cruise control system.

- For additional benefits and functionality of the Bendix® Wingman® Adaptive Cruise Control systems please see the Bendix® website.

3.3. Feature Interaction

The cruise control feature interacts with the following engine features:

- Engine Speed Control (PTO) – There is no direct interaction with PTO, but is important to understand that cruise control and PTO use the same switches.
- Cruise Control and Accelerator Pedals – The “Maximum Cruise Control Speed” (7604, 7909) and the “Accelerator Vehicle Speed Limit” (7902) parameters can be used to encourage driver behavior. Refer to the [Programmable Parameters](#) section for more information.
- Engine Retarder – There is engine retarder functionality related to cruise control which is described in the “Engine Retarder” document.
- Idle Speed Adjustment – When cruise control is enabled the Idle Speed Adjustment feature will be turned off.
- Gear Down Protection (GDP) – Depending on the conditions, vehicle speed may be limited by GDP. Refer to the “Gear Down Protection” document for more information.
- Progressive Shift – Cruise control speed settings may be affected by progressive shift.
- Vehicle Speed Limiter – Cruise control speed settings may be affected by vehicle speed limiter.

4. Programmable Parameters

The following programmable parameters are required for cruise control operation. These parameters should be programmed to the cruise control 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.

Cruise Control – (including Adaptive Cruise Control)

Parameter Name	Description	Possible Values	Customer Programmable?	Recommended Setting
Cruise Control Feature Enable (7600)	Select this parameter if the benefits of cruise control are desired.	0: Off 1: On	YES	Customer Chosen
Minimum Cruise Control Speed (7603)	This parameter sets the slowest vehicle speed at which the Cruise Control feature may be activated or remain active. It is intended to block the operator from cruising in urban areas.	25 – 100 (mph)	YES	Customer Chosen
Maximum Cruise Control Speed (7604, 7909)	This parameter sets the fastest vehicle speed at which the Cruise Control feature may be activated or remain active. This parameter can be used to encourage driver behavior. For example, fuel economy improvements can be realized by encouraging the driver to use cruise by setting the “Maximum Cruise Control Speed” (7604 & 7909) parameters higher than the “Accelerator Vehicle Speed Limit” (7902) setting used by the “Vehicle Speed Limiter” feature. Note 1: Parameters (7604) and (7909) settings must be less than the “Global Vehicle Speed Limit” (7937) parameter. See the “Vehicle Speed Limiter (VSL)” feature document for more information. Note 2: Do not set parameters (7604) and (7909) to the same value if the driver reward feature is enabled. Parameter (7604) is equal to (7909) plus the “VS LIMIT INCREMENT - EXCELLENT LVL” (7928) setting of driver reward. Example parameter setup if Driver Reward is enabled: 1. 7909 – Set to 65 mph 2. 7928 – Set to 5 mph. See the “Driver Reward” feature document for more information. 3. 7604 – Set to 70 mph (i.e. 65 + 5)	45 – 127 (mph)	YES	Customer Chosen (See Note 1 & 2)
Cruise Control Under Speed (7606)	This parameter sets the amount of vehicle speed allowed below the actual Cruise Control Set speed. Adjusting this parameter adjusts how tightly the engine tries to maintain the Cruise Control Set Speed value. This parameter setting effects performance and fuel economy. It is helpful to temporary allow speed variation when going uphill to reduce the time that the engine spends at maximum fueling, thereby improving fuel economy.	1 – 10 (mph)	YES	2 mph

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Cruise Control Over Speed (7605)	<p>This parameter sets the amount of vehicle speed allowed above the actual Cruise Control Set speed.</p> <p>Adjusting this parameter adjusts how tightly the engine tries to maintain the Cruise Control Set Speed value. This parameter setting effects performance and fuel economy.</p> <p>It is helpful to temporary allow speed variation when going downhill to increase the benefits of momentum and improve fuel economy.</p>	1 – 10 (mph)	YES	2 mph
Cruise Control Increment/Decrement (7612)	<p>This parameter sets the value used to increment or decrement the cruise control set speed.</p>	0 – 10 (mph)	YES	1 mph
Cruise Control Set Speed Memory Enable (7608)	<p>This parameter allows the cruise control resume speed to be placed into the memory of the ECM.</p> <p>If selected, the cruise control set speed will carry across key cycles.</p> <p>If the vehicle is shut down and restarted, “RESUME” is pressed and other conditions are met, then the previously active cruise set speed will activate.</p>	<p>0: Disable</p> <p>1: Enable</p>	YES	Customer Chosen

5. Parameter Setup

5.1. Possible Cruise Control Applications

This section briefly describes one example of cruise control configuration and operation. This configuration will likely need to be modified to meet the needs of the actual application that the owner/operator requires.

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 for your vehicle.

(Example A) Basic Cruise Control Configuration w/o Set Speed Memory.

In this example, the operator requires cruise control operation, but does not require the set speed memory functionality.

Adjust parameters as follows:

Parameter Name	Action Required
Cruise Control Feature Enable (7600)	Set to “1” (On)
Minimum Cruise Control Speed (7603)	Set to “30” mph

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Maximum Cruise Control Speed (7604)	Set to “70” mph
Maximum Cruise Control Speed (7909)	Set to “65” mph
Cruise Control Under Speed (7606)	Set to “2” mph
Cruise Control Over Speed (7605)	Set to “2” mph
Cruise Control Increment/Decrement (7612)	Set to “1” mph
Cruise Control Set Speed Memory Enable (7608)	Set to “0” (Disable)

Operation:

1. Activate the cruise control by pressing the “CRUISE ON” switch on the steering wheel.
2. Press “SET/COAST” between 30 and 65 mph to engage cruise control.
3. Additional functionality applies which is described in the [Description and Operation](#) section.

6. Frequently Asked Questions

Q: Can the engine retarder feature be used to help cruise control maintain the vehicle speed?

A: Yes, the cruise control automatic engine retarder feature engages the engine retarder at a programmable speed above cruise control maximum vehicle speed. This allows for better speed control and can reduce vehicle brake system wear. The engine retarder switch must be ON for this feature to work correctly. Refer to the “Engine Retarder” document for more information.