NAVISTAR ENGINE GROUP

International® A26 (2017)

Overview: *Cruise Control*

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General Overview: Cruise Control

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, 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 – The Neutral Coast feature is only available with select Eaton automated manual transmission models, and 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® A26 engine.

Description and Operation

Operation

> *NOTE: Refer to the vehicle operation and maintenance manual, as well as the A26 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)

Adaptive Cruise Control (ACC) is available with various unique systems including Bendix® Wingman® and Meritor Wabco OnGuard™. Each system provides alternative methods of ACC operation.

Adaptive Cruise Control operates with the vehicle cruise control to maintain a set speed; the system can also intervene as needed, to help maintain a set following distance behind the forward vehicle. Using a radar sensor mounted to the front of the vehicle, the ACC reacts to vehicles moving in the same direction

> *The system should not respond to side-to-side moving or oncoming traffic.*

Bendix® Wingman®- The Bendix® Wingman® provides ACC operation and interacts with the accelerator pedal position, engine brake, and vehicle brake systems. Wingman Advanced can provide audible and visual alerts when road obstructions are detected. Wingman Advanced also can provide collision mitigation to alert and intervene when a possible collision is detected. Cruise control does not need to be On for Wingman Advanced collision mitigation to intervene.

Meritor Wabco OnGuard™- OnGuard™ provides ACC operation and interacts with the accelerator pedal position, engine brake, and vehicle brake systems. OnGuard can provide audible and visual alerts when an unsafe following distance or possible collision is detected. OnGuard also provides a Collision Warning System to alert the driver when a possible collision is detected. Cruise control does not need to be On for OnGuard Collision Warning System to intervene.

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> *NOTE: For additional information, refer to the Applicable OnGuard™ or Wingman® user guide...*

Adaptive Cruise Control Operation

Adaptive Cruise Control is an integrated combination of three features:

- ACC with braking (engine or vehicle brakes)
- Alerts
- Collision mitigation technology

The ACC feature includes the following components:

- Driver Interface Unit (DIU)
- Radar sensor
- Automatic Traction Control (ATC) and Anti-lock Braking System (ABS)

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.

Collision Mitigation Technology

Adaptive Cruise Control collision mitigation technology is designed to react to the presence of moving forward vehicles whether or not cruise control is set. Collision

mitigation interventions can be up to two-thirds of the vehicle's braking capacity. The system provides the driver with an alert before an intervention occurs.

> *The operator must immediately act to potentially avoid or lesson the severity of a collision.*

Predictive Cruise Control (PCC) Functions (if equipped)

The Navistar 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.

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

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 by Jacobs® – The engine brake functionality related to Cruise Control is described in the Engine Brake features document.
- Gear Down Protection (GDP) – Vehicle speed may be limited by GDP, dependent 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 –With this feature enabled, active, and with the transmission in Neutral gear, the engine will simply 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 can't be changed without dealer authorization.

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
Cruise Control Mode (76001)	Select this parameter to switch ON or OFF the cruise control feature.	**0:** Disable **1:** Enable	YES	Customer Chosen
Cruise Control Vehicle Speed Low Limit (76032)	This parameter sets the lowest vehicle speed at which the Cruise Control feature may remain active or be activated.	25 to 100 mph	YES	Customer Chosen
Cruise Control Vehicle Speed High Limit (76043)	This parameter sets the highest vehicle speed at which the Cruise Control feature may remain active or be activated.	45 to 127 mph	YES	Customer Chosen
Cruise Control Max Droop (76050)	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	YES	3
Cruise Control Increment/Decrement (76122)	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 (70006)	This parameter sets the mode of operation for the Vehicle Retarder.	0: Disable 1: Service Brake Latched 2: Coast 3: Latched	YES	Customer chosen
Cruise Control Engine Retarder Enable (70061)	**(Optional Feature)** This parameter enables the cruise control related Engine Retarder functionality.	**0:** Disabled **1:** Enabled	YES	Customer chosen
Cruise Control Engine Retarder Low Speed (70032)	**(Optional Feature)** This parameter sets the vehicle speed (above the cruise set speed) at which the engine brake will activate at the programmed "Cruise Control Engine Retarder Low Activation (7005)" parameter setting.	1 to 20 MPH Default-5	YES	Customer chosen
Cruise Control Engine Retarder High Speed (70042)	**(Optional Feature)** This parameter sets the programmed speed (above the cruise set speed) at which the engine brake will activate at 100%.	1 to 20 MPH Default-8	YES	Customer chosen
Cruise Control Engine Retarder Low Activation (70052)	**(Optional Feature)** This parameter sets the activation percent (%) that the engine retarder feature starts at the Cruise Control Engine Retarder Low Speed (7003) parameter setting.	0 to 100%	YES	Customer chosen
Adaptive Cruise Control Enable (76104)	**(Optional Feature)** This parameter sets the mode of operation for the Adaptive Cruise Control	Disabled (0), Bendix Enabled (1), Meritor Wabco Enabled (2)	YES	Enabled
Predictive Cruise Control Available (76160)	**(Optional Feature)** This parameter enables the cruise control related Predictive Cruise Control functionality.	Not Available (0), Available (1)	YES	Customer chosen
PCC Maximum Negative Offset (76180)	Predictive cruise control vehicle speed is allowed to go this amount below CC set speed	(-10) to 0 Mph	YES	Customer chosen

Parameter Value	Description	Possible Values	Cust Pgrm?	Recommended Settings
PCC Maximum Positive Offset (76190)	Predictive cruise control vehicle speed is allowed to go this amount above CC set speed	0 – 5 Mph	YES	Customer chosen
Neutral Coast Control (89201)	**(Optional Feature)** This parameter enables the cruise control related Neutral Coast Control functionality.	Enabled (0), Disabled (3)	NO	Engineering

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 Mode (76001)	Set to 1 (ON)
Cruise Control Vehicle Speed Low Limit (76032)	Set to 30 mph
Cruise Control Vehicle Speed High Limit (76043)	Set to 75 mph
Cruise Control Increment/Decrement (76122)	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 Mode (76001)	Set to 1 (ON)
Cruise Control Vehicle Speed Low Limit (76032)	Set to 30 mph
Cruise Control Vehicle Speed High Limit (76043)	Set to 75 mph
Cruise Control Increment/Decrement (76122)	Set to 1 mph
Cruise Control Engine Retarder Enable (70061)	Set to 1 (ON)
Cruise Control Engine Retarder Low Speed (70032)	Set to 3 MPH
Cruise Control Engine Retarder High Speed (70042)	Set to 5 MPH
Cruise Control Engine Retarder Low Activation (7005)	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 A26 Engine Brake by Jacobs® feature be used to help Cruise Control maintain the vehicle speed?

Yes, the Cruise Control automatic engine brake feature engages the A26 Engine Brake by Jacobs® 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 A26 Engine Brake by Jacobs® feature document for more information.

Definitions/Acronyms

The following terms are referenced in this document:

Acronym	Definition
ABS	Anti-lock Braking System
ACC	Adaptive Cruise Control
ATC	Automatic Traction Control
DIU	Driver Interface Unit
APS	Accelerator Pedal Position Sensor
AESC	Auxiliary Engine Speed Control
PCC	Predictive Cruise Control