

# International<sup>®</sup> A26 (2021)

Overview: *A26 Engine Brake by  
Jacobs*<sup>®</sup>

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## General Overview: A26 Engine Brake by Jacobs®

The A26 Engine Brake by Jacobs® feature is used to supplement the function of the primary braking system. This feature helps to decelerate the vehicle and maintain a steady speed on declines.

This document will address the unique A26 Engine Brake by Jacobs® functionality for the A26.

## Description and 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.*

The A26 Engine Brake by Jacobs® feature consists of two operator control switches:

The ON/OFF switch allows the operator to enable or disable the system.

The level selection switch allows the operator to select from three settings:

Level 1: Low (33%)

Level 2: Medium (66% or variable if the Programmable Parameter is selected to Smart Level)

Level 3: High (100%)

### Operation

When the enable switch is placed in the ON position, two visual indicators are displayed. The A26 Engine Brake by Jacobs® ON/OFF switch LED and the yellow ENGINE BRAKE symbol in the gauge cluster turns ON.

The A26 Engine Brake by Jacobs® feature will operate when the following interlock conditions are satisfied:

- Cab mounted A26 Engine Brake by Jacobs® ON/OFF switch must be set to ON.
- Engine Brake Control Mode (A805 002) must not be disabled.
- Clutch pedal must be released.
- Accelerator pedal must be fully released.
- There must be no active vehicle speed sensor (VSS) faults.
- There must be no active truck or trailer anti-lock brake (ABS) faults.
- Vehicle must be in gear.
- Vehicle speed must be greater than the value of the Engine Brake Minimum Vehicle Speed (A801 008).
- Engine speed must be higher than a minimum speed calibrated.
- Oil temperature must be in the operating range calibrated.

## Engine brake Activation Modes:

The Engine Brake Control Mode (A805 002) parameter allows the customer to select one of five optional activation modes:

- Engine Brake Mode (0): Off/disabled
- Engine Brake Mode (1): Service Brake Latched
- Engine Brake Mode (2): Service Brake Coast
- Engine Brake Mode (3): Latched
- Engine Brake Mode (4): Smart Latched (Eaton AMT only)

## Cruise Control Option

The Cruise Control, optional, feature allows the A26 Engine Brake by Jacobs® to activate automatically during cruise control operation to help maintain the desired set speed.

## Feature Interaction

The A26 Engine Brake by Jacobs® feature interacts with the following engine features:

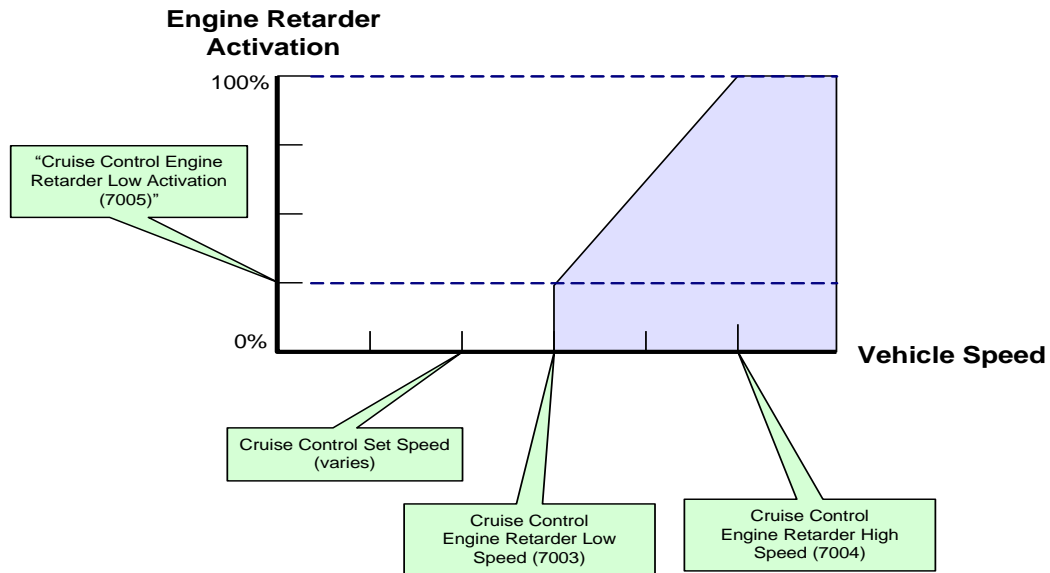
- Cruise Control – The A26 Engine Brake by Jacobs® feature can be activated automatically during cruise control operation.
- Vehicle Speed Governor – Behaves similarly to the interaction between A26 Engine Brake by Jacobs® and Cruise Control.
- Power Take-Off (AESC) – The A26 Engine Brake by Jacobs® feature will not function in AESC mode.
- Eaton Ultrashift® Transmission – Requires specific parameter set-up.

## Parameter Setup

### A26 Engine Brake by Jacobs® Example

The graph below illustrates the vehicle speed (MPH) and the corresponding A26 Engine Brake by Jacobs® activation percentage % (in blue) where cruise control activated A26 Engine Brake by Jacobs® is occurring.

## Cruise Control Engine Brake Graph



The following programmable parameters, shown in the graph, are customer adjustable. Default settings are used in this example:

- Engne Brake Cruise Control Low Activation (A804 002) (default = 35%)
- Engne Brake Cruise Control Low Speed (A804 000) (default = 4 MPH)
- Engne Brake Cruise Control High Speed (A804 001) (default = 6 MPH)

When the cruise set speed is 55 MPH and the vehicle speed reaches 59 MPH (set speed + 4 MPH), the Engne Brake Cruise Control Low Speed (A804 000) parameter is satisfied, and the feature will activate the A26 Engine Brake by Jacobs® at 35% as programmed in the Engne Brake Cruise Control Low Activation (A804 002) parameter. When the vehicle speed reaches 61 MPH (set speed + 6 MPH) the Engne Brake Cruise Control High Speed (A804 001) parameter is satisfied, and the feature will activate the A26 Engine Brake by Jacobs® at 100%.

A26 Engine Brake by Jacobs® activation percentage increases as vehicle speed increases above the cruise set speed only between the programmed parameter settings for Engne Brake Cruise Control Low Speed (A804 000) and Engne Brake Cruise Control High Speed (A804 001) reaching a maximum value of 100%.

## A26 Engine Brake by Jacobs® Applications

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 does 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 engine parameters might be best configured to your vehicle.

| Programmable Parameter Setup                          |           |       |
|---|-----------|-------|
| Parameter   | Value     | Units |
| Engine Brake Control Mode (A805 002)                  | - Latched |       |
| Engine Brake - Brake Pedal Delay (A805 003)           | 0.3       | Sec   |
| Engine Brake - Accelerator Pedal Delay (A805 004)     | 0.8       | Sec   |
| Engine Brake Minimum Vehicle Speed (A801 008)         | 10        | MPH   |
| Engine Brake Cruise Control Low Speed (A804 000)      | 4         | MPH   |
| Engine Brake Cruise Control High Speed (A804 001)     | 6         | MPH   |
| Engine Brake Cruise Control Low Activation (A804 002) | 35        | %     |
| Engine Brake Cruise Control Enable (A804 003)         | ON        | On/   |
| Smart Engine Brake Level Enable (A805 006)            | Enabled   |       |

### Programmable Parameters

The following programmable parameters are available with the A26 Engine Brake by Jacobs® feature. Full benefits of this feature will be realized when programming is done based on 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 dealer authorization.

| Parameter Value                                   | Description  | Possible Values  | Cust Pgrm | Recommended Settings |
|---|--|--|-----------|----------------------|
| Engine Brake Control Mode (A805 002)              | <p>This parameter determines the conditions that the Engine Brake feature will be functional.</p> <p>If set to (Disable) - The Engine Brake functionality is disabled.</p> <p>If set to (Service Brake Latched) - The Engine Brake is active programmable time after service brake has been pressed (See Note 2). Also, the accelerator pedal must not be pressed.</p> <p>If set to (Coast) - The Engine Brake is active programmable time after the service brake pedal has been pressed and remains pressed (See Note 2).</p> <p>If set to (Latched) - The Engine Brake is active programmable time after the accelerator pedal is released (See Note 1).</p> <p>If set to (Smart Latched) - The Engine Brake will transition between Service Brake Latched and Latched. The mode transitions are determined by the road grade. This allows the truck to use the more fuel efficient service brake latched mode on flat terrain and transition to the more aggressive braking mode in steep hills.</p> | <ul style="list-style-type: none"> <li>- Disable</li> <li>- Service Brake Latched</li> <li>- Coast</li> <li>- Latched</li> <li>- Smart Latched</li> </ul> <p><b>Note 1:</b> The time is programmable by parameter (A805 004).</p> <p><b>Note 2:</b> The time is programmable by parameter (A805 003).</p> <p>Note 3: Smart Latched should only be used on Eaton AMT trucks</p> | YES       | Customer chosen      |
| Engine Brake - Brake Pedal Delay (A805 003)       | <p>This parameter sets the delay time for the (optional) service brake pedal activated Engine Brake.</p> <p><b>Note:</b> The Engine Brake mode must be set to Service Brake Latched or Coast.</p>  | 0 to 300 seconds   | YES       | 0.3 seconds          |
| Engine Brake - Accelerator Pedal Delay (A805 004) | <p>This parameter sets the delay time for (optional) accelerator pedal activated Engine Brake or Smart Latched.</p> <p><b>Note:</b> The Engine Brake mode must be set to Latched or Smart Latched.</p>   | 0 to 300 seconds   | YES       | 0.8 seconds          |
| Engine Brake - Minimum Vehicle Speed (A801 008)   | <p>This parameter sets the minimum vehicle speed limit that the Engine Brake can be activated.</p> <p><b>Note:</b> If a minimum vehicle speed for Engine Brake engagement is NOT desired, this parameter should be set to (0).</p>   | 0 to 130.5 MPH   | YES       | 10 MPH               |
| Engine Brake Cruise Control Enable (A894 003)     | <p><b>(Optional Feature)</b><br/>This parameter enables the cruise control related Engine Brake functionality.</p>   | <ul style="list-style-type: none"> <li>- Disabled</li> <li>- Enabled</li> </ul>  | YES       | Enabled              |

| Parameter Value   | Description  | Possible Values   | Cust Pgrm | Recommended Settings   |
|---|--|---|-----------|--|
| Engine Brake Cruise Control Low Speed (A804 000)                      | <b>(Optional Feature)</b><br>This parameter sets the vehicle speed above the cruise set speed at which the Engine Brake will activate at the programmed Cruise Control Engine Brake Low Activation (A804 002) parameter setting.   | 1 to 130.5 MPH  | YES       | 4 MPH<br><b>Note:</b> This should be set higher than the PCC Maximum Positive Offset (A804 00E) parameter value. |
| Engine Brake Cruise Control High Vehicle Speed (A804 001)             | <b>(Optional Feature)</b><br>This parameter sets the programmed speed (above the cruise set speed) at which the engine brake will activate at 100%.  | 0 to 130.5 MPH  | YES       | 6 MPH  |
| Engine Brake Cruise Control Low Vehicle Speed Activation % (A804 002) | <b>(Optional Feature)</b><br>This parameter sets the activation percent (%) that the engine brake feature starts at the Cruise Control Engine Retarder Low Speed (A804 000) parameter setting.   | 0 to 100%   | YES       | 35%  |
| Retarder Will Pause Cruise (A908 000)                                 | If cruise control is on and the engine brake transitions from off to on, cruise control will pause (the set speed will flash). When the engine brake is turned off, cruise control will automatically resume.  | - Disable<br>- Enable   | No        |  |
| Engine Brake - Road Speed Limit Enable (A801 009)                     | When enabled the engine brake will active when the truck exceeds the maximum programmed vehicle speed plus the (A804 000) brake enable low speed offset. It also allows the customer to determine if the driver can disable the brake with the accelerator pedal in vehicle over speed situations. | - Disabled<br>- Enabled, accelerator pedal will disable brake<br>- Enabled, accelerator pedal will NOT disable brake  | YES       | 2  |
| Engine Brake - CC/RSL Switch (A805 005)                               | This parameter determines if the retarder on/off level switch will affect the operation of the retarder during cruise control of when the road speed limiting is active.   | - Switch off will allow CC/RSL brake activation<br>- Switch off will only disable RSL brake activation.<br>- Switch off will disable both CC and RSL brake activation.<br>- Switch off will only disable CC brake activation. | YES       | 1  |
| Engine Brake - Smart Level Enable (A805 006)                          | When enabled level 2-Medium will switch to an acceleration based brake level. This allows the driver to descend long hills with varying grades and not have to manually switch brake levels to maintain the vehicle speed. This feature is optimized for Eaton AMT transmissions.                  | - Disabled<br>- Enabled   | YES       | 0  |



| Parameter Value                                  | Description  | Possible Values  | Cust Pgrm | Recommended Settings |
|--|--|--|-----------|----------------------|
| Engine Brake Switch 1 Input Selection (A800 010) | <p>This parameter selects how the ECM sees the switch for setting Source addresses.</p> <ul style="list-style-type: none"> <li>• If set to (Enabled with Hardwire input) - The switch input is supplied on a hardwired circuit</li> <li>• If set to (Enabled with CAN input) - The switch input is supplied on the data link.</li> </ul> | <p>- Enabled with Hardwire input</p> <p>- Enabled with CAN input</p> | YES       | Customer Chosen      |

## Frequently Asked Questions

### **Will the A26 Engine Brake by Jacobs® activate with Cruise Control engaged?**

Yes, if the Engine Brake Cruise Control Engine (A894 003) parameter is “Enabled” and the related parameters are set correctly, the Engine Brake will activate automatically to help maintain the desired cruise control set speed.

### **Can I install the A26 Engine Brake by Jacobs® if my truck is not originally equipped with one?**

Yes, but it may be expensive, as some internal engine components may need to be changed.

## Definitions/Acronyms

The following terms are referenced in this document:

| Acronym | Definition                     |
|---------|--------------------------------|
| HP      | Horsepower                     |
| AESC    | Auxiliary Engine Speed Control |
| RPM     | Revolutions Per Minute         |
| VSS     | Vehicle Speed Sensor           |