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1. Idle Shutdown Timer (General Overview)

The document will address unique idle shutdown timer functionality for MaxxForce® 11L and 13L California Air Resources Board (CARB) certified engines ordered before September 1, 2009. The “Legacy CARB Idle Shutdown” (7411) parameter setting, referenced in the “Programmable Parameters” section of this document confirms you have this feature.

The idle shutdown timer (IST) feature is designed to reduce emissions and conserve fuel by automatically shutting down the engine during extended idle times.

This feature can be configured to help meet these requirements; however, the vehicle owner or operator is ultimately responsible for compliance. The regulations for each location are outside of the scope of this document.

To set up the Idle Shutdown Timer 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.

1.1. Feature Codes

Specifically, this document will address the operation and programming of idle shutdown for the following emissions compliance features:

- **12WZC** – EMISSION COMPLIANCE 5 Min., Tamper-Proof Engine Shutdown System, Complies With California Clean Air Regulations, Does Not Certify Engine for Low-NOx Extended Idling. NOTE: This feature is for available for all MaxxForce® engines and for vehicles that must comply with CARB regulations.
- **12WZD** – EMISSION COMPLIANCE Engine Shutdown System Exempt Vehicles, Complies With California Clean Air Regulations. NOTE: This feature is only available for International truck applications that will allow a vehicle to be qualified as vocationally exempt.
- **12WZE** – EMISSION COMPLIANCE Federal, Does Not Comply With California Clean Air Regulations. NOTE: This feature is for any vehicle that meets current federal EPA standards but is not required to meet CARB regulations.

2. Definitions/Acronyms

The following terms are referenced in this document:

- **CAP** – Cold Ambient Protection
- **CARB** – California Air Resources Board
- **DPF** – Diesel Particulate Filter
- **ECM** – Engine Control Module
- **ECT** – Engine Coolant Temperature
- **ESS** – Engine Shutdown System
- **IST** – Idle Shutdown Timer
- **PTO** – Power Take Off

3. Description and Operation

This section will discuss common idle shutdown functionality. Refer to the appropriate “Operation” or “Programmable Parameters” section of this document for idle shutdown functionality based on the emissions calibration of the vehicle.

The idle shutdown timer is used to limit the amount of engine idle time by automatically shutting down the engine after a pre-programmed time has expired. Programmable parameters within the engine control module (ECM) determine the time and conditions required before the engine shuts down. Some parameters provide idle shutdown related options that can be adjusted to suit the customer’s needs.

The idle shutdown timer only starts after the vehicle is stationary; the engine is running and other “interlock” conditions (i.e. parking brake set, etc.) are met. Interrupting these interlocks will reset the impending engine shutdown sequence and the timer will restart.

Thirty seconds before the engine shutdown occurs, there will be a visual indication in the instrument panel and an audible warning will sound. This continues until the engine shuts down or the idle shutdown timer is reset.

Note 1: This feature shuts down the engine, but the vehicle electrical system and accessories will remain active until the key switch is turned off.

The interlock conditions which allow the feature to shut down the engine are subject to the “Idle Shutdown Timer Mode” (7400) programmable parameter setting. This parameter is set by the engine manufacturer.

3.1. Idle Shutdown Sequence

Simplified, the idle shutdown sequence begins when the timer starts, followed by a visual and audible warning, and finally the engine shuts down.

1. Idle Shutdown Timer Starts

The idle shutdown timer starts if the vehicle conditions are met (i.e. vehicle stationary, engine at idle speed, etc.) These conditions vary depending on the emissions calibration of the engine.

2. Idle Shutdown Warning

The idle shutdown warning occurs 30 seconds before the idle shutdown timer expires (i.e. 30 seconds before shutdown).

This happens if the engine has been idling for an extended period of time (time is programmable) while the vehicle conditions (described above) are met.

NOTE: The amber “IDLE SHUT DOWN” indicator (if equipped) will flash in the gauge cluster for 30 seconds during the warning. An audible alarm will also sound. If a manual “reset” or “override” function (i.e. brake, clutch, etc.) is not activated, the engine will shut down.

3. Engine Shutdown

The idle shutdown timer expires and the idle shutdown feature shuts down the engine.

NOTE: Refer to the appropriate “Operation” or “Programmable Parameters” section of this document for idle shutdown functionality based on the emissions calibration of the vehicle.

3.2. Operation

3.2.1. Legacy CARB IST

This section describes the idle shutdown functionality which is unique to Legacy CARB certified emissions.

- Customers cannot disable the idle shutdown feature.
- “Tamper proofing” is always enabled, regardless of the “Idle Shutdown Timer Mode” selection.
- Idle shutdown will be disabled if the engine coolant operating temperature is below 60°F (non-programmable).
- (Customer Adjustable Parameter) Timer can be adjusted from 2 to 15 minutes.

3.2.1.1. *Idle Shutdown Timer Starts:*

To enter the idle shutdown timer sequence (clock starts counting), all of the following conditions must be true:

- Engine must be running.
- Vehicle must be stationary.
- Manual Diesel Particulate Filter (DPF) regeneration (“Parked Regeneration”) must be inactive.
- Must be in park (automatic transmission) or neutral gear position (automatic or manual transmission).
- Engine coolant operating temperature must be above 60°F (16°C).
- The engine reported fuel usage (load) must be less than 30%.
- (Customer Selectable Option) – If the “PTO Option” is enabled by the “Idle Shutdown Timer Mode” (7400) programmable parameter, the Power Takeoff (PTO) and the Remote PTO must be inactive or in standby mode.

3.2.1.2. *Reset Idle Shutdown Timer:*

After the vehicle conditions (described above) are met to “start the timer”, any of the following conditions will reset the timer (clock) to 0. The reset function can be activated any time before the engine shuts down.

- Accelerator pedal movement.
- Brake pedal movement.
- (Manual transmissions) Clutch pedal movement.
- (Automatic transmissions) Shift selector movement.
- Parking brake movement.

NOTE: If one or more of the conditions above has caused the timer to “reset” and if the conditions to “start the timer” are still met, the timer will begin counting again.

3.2.1.3. *Idle Shutdown Warning:*

The idle shutdown warning occurs 30 seconds before the engine shuts down. This happens if the engine has been idling for an extended period of time (time is programmable) while the vehicle conditions to “start the timer” are met.

NOTE: The amber “IDLE SHUT DOWN” indicator (if equipped) will flash in the gauge cluster for 30 seconds during the warning. An audible alarm will also sound. If a manual “reset” function (i.e. brake, clutch, etc.) is not activated, the engine will shut down.

3.2.1.4. *Engine Shutdown:*

The idle shutdown feature shuts down the engine after the timer expires.

The timer expires when it has counted and reached the programmed “Idle Shutdown Time” parameter value. The factory setting is 5 minutes with the parking brake set, but this setting is customer programmable.

3.3. Feature Interaction

The idle shutdown timer (IST) feature interacts with the following engine features:

- Cold Ambient Protection (CAP) – If the IST is enabled, it may interact with CAP. Refer to the “Vehicle Setup” document for more information.

4. Programmable Parameters

4.1. 12WZC (CARB Certified Emissions)

The following idle shutdown related programmable parameters are available with CARB certified emissions. These parameters should be programmed to limit engine idle time, but not in a way that may inconvenience drivers who rely on the engine for heat and air conditioning inside the cab, for example.

Parameters indicated as “Customer Programmable” can be adjusted differently than the production assembly plant setting to meet the customer’s needs. This adjustment can be done before or after the original sale. 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.

Legacy CARB - Idle Shutdown Timer (IST)

Parameter Name	Description	Possible Values	Customer Programmable?	Recommended Setting
Idle Shutdown Type (7411)	<p>(Required Parameter) This parameter is based on the emission calibration. It may not be changed post-original equipment manufacturer (OEM) except through your authorized dealer.</p>	<p>1: Legacy CARB Compliant Emissions Vehicle</p> <p>Note 1: If set to 0 refer to the "Standard IST" Document</p>	NO	1
Idle Shutdown Timer Mode (7400)	<p>(Required Parameter) This parameter determines the conditions that the Idle Shutdown Feature will be functional.</p> <ul style="list-style-type: none"> If set to (1) – Provides idle shutdown functionality with the following exception: The idle shutdown timer sequence will be prevented and the engine will not shut down while the PTO or any auxiliary engine speed control is engaged (i.e. engine speed ramped above normal idle). If set to (3) – Provides idle shutdown functionality with the following exception: The engine may shutdown if PTO engine speed control is engaged and the "mode" is set to (3). <p>Note 3: This parameter may be changed through your authorized dealer.</p>	<p>1: Idle Shutdown Timer – "With PTO" Option</p> <p>3: Idle Shutdown Timer – "Without PTO" Option</p>	NO	Customer Chosen (at point of purchase)
Idle Shutdown Time – No Park Brake Set (7401)	<p>(Required Parameter) Sets the amount of engine idle time before the idle shutdown feature will initiate an engine shut down while the parking brake is not set.</p> <p>Note 1: If this parameter is set to 15 minutes (and certain vehicle conditions are satisfied), the engine will shut down in 15 minutes.</p> <p>Note 2: While the Electronic Service Tool is installed, this time may be extended regardless of the parameter setting.</p>	2 to 15 (minutes)	YES	15

Idle Shutdown Time – Park Brake Set (7404)	<p>(Required Parameter) Sets the amount of engine idle time before the idle shutdown feature will initiate an engine shut down while the parking brake is set.</p> <p>Note 1: If this parameter is set to 5 minutes (and certain vehicle conditions are satisfied), the engine will shut down in 5 minutes.</p>	2 to 5 (minutes)	YES	5 Note 2: While the Electronic Service Tool is installed, this time may be extended regardless of the parameter setting.
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5. Frequently Asked Questions

Q. How do I change a Legacy CARB certified engine to an updated Standard IST?

A. There is a request form located in the “Vehicle Information” section on ISIS which must be filled out and submitted by an authorized dealer. Only an authorized dealer can change the emissions setting. NOTE: The form is specific to the vehicle identification number (VIN) of the vehicle. There is also an IKnow article available:

https://evaluate.internationaldelivers.com/service_kb/iKnow/Document_Viewer.aspx?Control_ID=1334

Q. Can I restart the engine immediately after the idle shutdown timer feature has shut the engine down?

A. Yes, just cycle the key switch and restart the engine. Normal idle shutdown functionality will be reactivated if conditions are met.

Q. I want to change my idle shut down timer mode but the service tool will not allow. Can I change the mode?

A. Yes, but only through your authorized dealer.

Q: My “Idle Shut Down” warning light and the audible alarm have been activated. Can I prevent the engine from shutting down?

A. Yes, Legacy CARB certified engines allow the driver to perform a manual “reset” to restart the timer any time before the engine shuts down by pressing the brake, clutch, or accelerator pedal.