

MaxxForce[®] 7 (2010)

Overview: *Idle Shutdown Timer*
(CARB Certified Engines)

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General Overview: Idle Shutdown Timer

The Idle Shutdown Timer (IST) feature is designed to automatically shut down the engine during extended idle time periods. This feature is used to allow the engine to comply with California Air Research Board (CARB) emission requirements.

Effective January 1, 2008, engines built for vehicles registered in California or a CARB opt-in state must be certified under the new California Idle Reduction Rule (CCR Title 13 Section 1956.8 (a)(6)).

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

This document will address unique idle shutdown timer functionality for the MaxxForce® 7.

Description and Operation

The IST is used to limit the amount of engine idle time by automatically shutting down the engine after a pre-programmed time limit has expired.

The IST system starts the timer sequence only after the vehicle is stationary; the engine is running and other interlock conditions (i.e. parking brake set, etc.) are met. The IST sequence can be reset by interrupting these interlocks during the impending engine shutdown sequence. A visual indication in the instrument panel and an audible warning will sound thirty seconds before engine shutdown occurs. This will continue until the engine shuts down or the idle shutdown timer is reset.

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

Operation

Idle Shutdown Timer

This section describes the idle shutdown functionality.

- 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) IST timer can be adjusted from 2 to 15 minutes.

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 at idle speed (700 RPM).
- Vehicle must be stationary.
- No accelerator pedal movement.
- No service brake pedal movement.
- No parking brake movement.
- 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 type 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 programmable parameter, the power take off (PTO) and the remote PTO must be inactive or in standby mode.

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.
- Clutch pedal movement (manual transmissions).
- Shift selector movement (automatic transmissions).
- Parking brake movement.

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.

Idle Shutdown Override

The manual override feature (if enabled) allows the driver to stop the timer (preventing the impending engine shutdown) by pressing the brake or clutch. The override function can be activated any time before the engine shuts down.

The manual override function is different than the reset function as described in the previous section. When the driver performs the override, the timer will be stopped until the vehicle is driven or the ignition key is cycled.

The override feature can be selected to automatically prevent the engine from shutting down based on outside ambient temperature for driver comfort, if desired.

Idle Shutdown Warning

The idle shutdown warning occurs 30 seconds before the idle shutdown timer expires (i.e. 30 seconds before shutdown). On multiplex electrical systems an amber IDLE SHUT DOWN indicator will illuminate in the gauge cluster for 30 seconds. On non-multiplex electrical systems a red flashing IDLE SHUT DOWN indicator and an audible alarm will sound during the warning. If a manual reset or override function (i.e. brake, clutch, etc.) is not activated, the engine will shut down.

An override feature allows the brake and clutch to be programmed to stop the shutdown sequence until the vehicle is driven or the ignition key switch is cycled.

The idle shutdown feature also has an additional (optional) tamper proofing feature which is used to prevent operators from bypassing an impending shutdown. Refer to the Tamper Proofing section for more information.

Engine Shutdown

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

The vehicle electrical system and accessories will remain active until the key switch is turned off.

Tamper Proofing

Tamper Proofing is included with the IST feature. This feature monitors various inputs (i.e., driver pedals, vehicle speed, etc.) to prevent the driver from bypassing the idle shutdown timer. The following condition will enable the tamper proofing.

- The accelerator pedal has remained constant for a specific time period (for example, the operator put a weight on the accelerator pedal).
- The service brake pedal has not moved.
- Vehicle speed is at 0 mph.
- No parking brake pedal movement.
- No active IST Limp Home fault mode.

For further information on this programmable option for the IST system please see the applicable table under the "Programmable Parameter" section.

Feature Interaction

The IST feature interacts with the Cold Ambient Protection (CAP) feature. If the IST feature is active and running, the CAP feature will be deactivated.

Programmable Parameters

The following programmable parameters are available with the IST. 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.

To meet the customer's needs, programmable parameters can be reset from the production plant settings. If the parameter is indicated as not programmable, the setting is preset from the factory and can't be changed without dealer authorization.

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
Engine Idle Shutdown CARB (7411)	<p>This parameter is based on the emission calibration. This parameter may not be changed by the post-original equipment manufacturer (OEM) except through your authorized dealer.</p> <p>This parameter enables the CARB mode for CARB specific market vehicles. Under CARB mode, the following threshold values change:</p> <ul style="list-style-type: none"> The minimum engine coolant temperature required for IST activation is set to 60 °C (140°F) with CARB mode disabled and 16 °C (60°F) with CARB mode enabled The maximum ambient temperature under which IST will function is set to Engine Idle Shutdown Maximum Intake Air Temperature (7402) with CARB mode disabled and 150° C (302°F) with CARB mode enabled The minimum ambient temperature for IST activation is set to Engine Idle Shutdown Minimum Intake Air Temperature (7403) with CARB mode disabled and -40 ° C (-40°F) with CARB mode enabled <p>The IST time is set to 15 minutes with parking brake disengaged and five minutes with parking brake engaged</p>	<p>0: CARB IST Disabled 1: CARB IST Enabled</p> <p>Note 1: If set to 0, refer to the IST document. Note 2: If set to 1, refer to this CARB IST document.</p>	NO	1: CARB IST Enabled Per market requirements

Parameter Value	Description	Possible Values	Cust Pgrm	Recommended Settings
Engine Idle Shutdown Timer Mode (7400)	<p>This parameter determines the conditions under which the idle shutdown feature will be functional. This parameter may be changed through your authorized dealer.</p> <ul style="list-style-type: none"> ▪ If set to 0 – The idle shutdown timer is disabled. This means that the engine will not be shut down automatically by the idle shutdown feature. ▪ If set to 1 – The idle shutdown timer sequence will be prevented and the engine will not shut down while the PTO or any auxiliary engine speeds control is actively ramping the engine above normal engine idle speed. ▪ If set to (2) – The engine may shutdown if PTO engine speed control is engaged. This allows the engine to stay running, for example, if the operator desires to have the engine speed ramped up during PTO operation. This mode also prevents the operator from setting the engine speed with a minimum load (e.g., 10% engine torque) without actually engaging the PTO with the intent of bypassing the idle shutdown timer. ▪ If set to 3 – The engine may shutdown if PTO engine speed control is engaged. Puts the feature in tamper proofing mode. Refer to the tamper proofing section for more information. 	<p>0: Disable 1: PTO Option 2: No Load Option 3: Tamper Proof</p>	NO	Program Support
Engine Idle Shutdown Time (7401)	<p>Sets the amount of engine idle time before the idle shutdown feature will initiate an engine shutdown while the parking break is not set.</p> <p>Note 1: While the Electronic Service Tool is installed, this time may be extended regardless of the parameter setting.</p>	2 – 15 (minutes)	YES	15

Parameter Setup

N/A

Frequently Asked Questions

Can I operate a power take off (PTO) device on a vehicle equipped with an idle shutdown timer?

Yes, the Idle Shutdown Timer Mode (7400) programmable parameter can be adjusted to allow PTO operation.

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

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

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

Yes, but only through your authorized dealer.

My Idle Shut Down warning light and the audible alarm has been activated. Can I prevent the engine from shutting down?

Yes, the driver can perform a manual “reset” to restart the timer any time before the engine shuts down by pressing the brake, clutch, or accelerator pedal.

Definitions/Acronyms

The following terms are referenced in this document:

Acronym	Definition
CAP	Cold Ambient Protection
ECM	Engine Control Module
ECT	Engine Coolant Temperature
IST	Idle Shutdown Timer
OEM	Original Equipment Manufacturer
PTO	Power Take Off