

MaxxForce[®] 7 (2010)

Overview: *Idle Shutdown Timer*
(*Non-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 local idle requirements. This feature will assist the owner or operator in setting a balance between fuel consumption and driver comfort.

This feature can be configured to help meet these requirements; however, the vehicle owner or operator is 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 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.

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

Idle Shutdown Timer Programmable Options

Programmable options for the idle shutdown timer include:

- Idle shut down can be disabled.
- Idle shutdown timer can be adjusted from 2 to 120 minutes
- Tamper Proofing is a customer option selected in the Idle Shutdown Timer Mode programmable parameter.
- Throttle pedal (application %) can be programmed to reset the timer.
- Brake/Clutch inputs can be programmed to stop the shutdown timer until the vehicle is driven or the ignition key switch is cycled.
- Can be programmed to inhibit the idle shutdown based on engine coolant temperature.
- Can be programmed to inhibit the idle shutdown based on outside ambient air temperature for driver comfort.
- Can be programmed to inhibit the idle shutdown based on percent (%) engine load.

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.
- 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 temperatures must be between the customer programmable ECT limits.
- If the idle shutdown timer mode programmable parameter is set to mode 1 (light load PTO), the power takeoff (PTO) and the remote PTO must be inactive or in standby mode.

- If the idle shutdown timer mode programmable parameter is set to mode 2 (no load) or mode 3 (tamper proofing), the engine reported fuel usage (load) must be less than 30%.
- If the idle shutdown timer mode programmable parameter is set to mode 1 (light load PTO) or mode 2 (no load), the accelerator pedal position must be less than 20% applied.

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

A manual override feature (if enabled) allows the driver to stop the timer (thereby 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.

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

The manual override functionality is only allowed if the idle shutdown timer mode parameter is set to Mode 1 or Mode 2.

The disabled option for the idle shutdown timer mode parameter allows the customer to permanently disable the idle shutdown feature, such that the idle shutdown will never occur regardless of vehicle conditions.

Feature Interaction

The IST feature interacts with the Cold Ambient Protection (CAP) feature. If the CAP feature is active and actively running, the IST 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)	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.	0: CARB IST Disabled 1: CARB IST Enabled Note 1: If set to 0, refer to the IST document. Note 2: If set to 1, refer to this CARB IST document.	NO	0: CARB IST Disabled Per market requirements
Engine Idle Shutdown Timer Mode (7400)	This parameter determines the conditions under which the idle shutdown feature will be functional. This parameter may be changed through your authorized dealer. <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. 	0: Disable 1: PTO Option 2: No Load Option 3: Tamper Proof	NO	Program Support
Engine Idle Shutdown Time (7401)	Sets the amount of engine idle time before the idle shutdown feature will initiate an engine shutdown while the parking break is not set. Note 1: While the Electronic Service Tool is installed, this time may be extended regardless of the parameter setting.	2 – 120 (minutes)	YES	15

Parameter Setup

This section describes only a few possible applications of the feature and how the programmable parameters can be effectively configured for each 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 and the idle shutdown timer mode might be best configured for your vehicle.

EXAMPLE A - Customer desires to extend engine idle as much as possible to allow the HVAC to keep the driver comfortable during extreme weather conditions:

In this example, let's assume that the customer desires to keep the engine idling as much as possible without having to manually "reset" the timer in order to maintain cabin heat or air conditioning. This might be considered an "Over the road" or "Sleeper" engine idle application.

One way to accomplish this is to use the ambient temperature override feature. Adjust parameters as follows:

Parameter Name	Action Required
Idle Shutdown Timer - Control Mode (7400)	Select Mode 1
Idle Shutdown Timer - Shutdown Time (7401)	Set the value to 15
Idle Shutdown Timer - Minimum Intake Air Temperature (7403)	Set the value to 45°F (7.2°C)

Given the above parameter settings, the feature will automatically override (prevent) the engine idle shutdown if the temperature falls below 45°F (7.2°C). These factory preprogrammed temperature settings are customer adjustable.

EXAMPLE B - Customer desires to limit the engine idle as much as possible to conserve fuel:

In this example, let's assume that the customer desires to prevent the engine from idling as much as possible in order to conserve fuel. This might be considered a Fuel Economy Day Trip engine idle application.

One way to accomplish this is to adjust parameters as follows:

Parameter Name	Action Required
Idle Shutdown Timer - Control Mode (7400)	Select Mode 3
Idle Shutdown Timer - Shutdown Time (7401)	Set the value to 15

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