

Section 5.14

Idle Shutdown Timer and PTO Shutdown

The Idle Shutdown Timer will shutdown the engine if it remains idling for a specified period of time. The options that can operate with Idle Shutdown Timer are Idle Shutdown Override, Vehicle Power Shutdown or Shutdown on Power Take-off (PTO).

Section 5.14.1

OPERATION — IDLE SHUTDOWN NON-ptO MODE

There are four modes of operation for Idle Shutdown:

- Disabled – in this mode, idle shutdown will not occur.
- Park Brake – in this mode, idle shutdown will be enabled only when the park brake is applied, the accelerator pedal position is at zero and the engine is idling.
- No Park Brake – this mode is the same as Park Brake Mode above, except there is no requirement for the park brake to be applied.
- Edge Triggered Accelerator Pedal – this mode has no requirement on the park brake or on the engine being at idle. The operator may reset the Idle Shutdown procedure by moving the accelerator pedal from below 40% to above 80%.

The idle shutdown period can range from 1 to 5000 seconds (approximately 83 minutes).

Certain conditions must be met for the entire time-out period for shutdown to occur. These conditions include:

- Coolant temperature above 50°F (10°C)
- Engine operation at idle
- The parking brake ON, digital input switched to battery ground (optional)
- Ignition ON
- Vehicle Speed Less than 3 mph (5 kph)

Fueling is stopped after the specified idle time; the ignition circuit remains active after the engine shuts down. The AWL will flash 20 seconds before the shutdown occurs. The RSL will flash 10 seconds before shutdown occurs. The AWL will continue flashing until the ignition is turned off to indicate shutdown has occurred. The RSL will turn off. The ignition switch must be cycled to OFF (wait 10 seconds) and back to ON before the engine will restart, if shutdown occurs.

A Park Brake Switch may be installed (see Figure "Park Brake Digital Input").

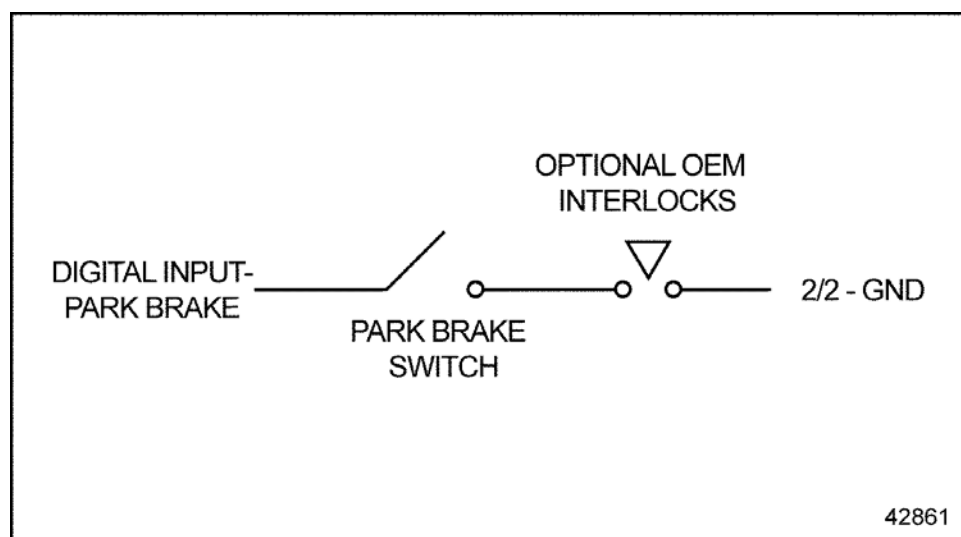


Figure 1. Park Brake Digital Input

Section 5.14.1.1 Inactive Shutdown

The idle timer can be defeated by holding down the throttle or by not setting the park brake. The inactive timer will shutdown the engine after twenty minutes if fueling is not sufficient to accelerate the vehicle.

Section 5.14.2 Operation — PTO SHUTDOWN

There are four modes of operation for PTO shutdown:

- Disabled – in this mode, PTO shutdown will not occur.
- Park Brake – in this mode, PTO shutdown will be enabled only when the park brake is applied, the accelerator pedal position is at zero and the actual engine torque is less than 100 N·m (Max Engine Load PTO Shutdown)..
- No Park Brake – this mode is the same as Park Brake Mode above, except there is no requirement for the park brake to be applied.
- Edge Triggered Accelerator Pedal – this mode has no requirement on the park brake or the actual torque. The operator may reset the PTO shutdown procedure by moving the accelerator pedal from below 40% to above 80%.

The PTO shutdown period can range from 1 to 5000 seconds (approximately 16 minutes).

A Park Brake Switch may be installed (see Figure "Park Brake Digital Input").

Section 5.14.3 IDLE SHUTDOWN TIMER and PTO Shutdown OPTIONS

The following options are available with Idle Shutdown Timer and PTO Shutdown.

Section 5.14.3.1 Idle / PTO Shutdown Override

Idle/PTO Shutdown Override allows the operator to override the idle shutdown timer or PTO shutdown timer based on the selected override.

The shutdown will be overridden if any of the following conditions occur:

- The accelerator pedal is in limp-home mode
- Parked Regen is in progress. After regeneration completes, the override will remain in place for an additional five minutes to allow the particulate filter to cool down after the regeneration cycle has completed.
- Operator Override is enabled (Enable Idle PTO Shtdn Override) as listed in Table "Operator Override Options" .

Option	Conditions	Results
	Allows a temporary override if any of the following occur:	
Option 1 Enabled: Override with Throttle Pedal, SEO, Clutch Service Brake	<ul style="list-style-type: none"> • SEO Override switch is ON • Service Brake is applied (switch is open) • Clutch is pressed (switch is open) • Throttle Pedal >0% 	Idle and/or PTO timer will be reset (shutdown sequence will restart)
	Allows a temporary override if any of the following occur:	
Option 2 Enabled: Override with Throttle Pedal, SEO	<ul style="list-style-type: none"> • SEO Override switch is ON • Throttle Pedal >0% 	Idle and/or PTO timer will be reset (shutdown sequence will restart)
	Allows a continuous override if any of the following occur:	
Option 3 Enabled: Continuous Override with Throttle Pedal, SEO	<ul style="list-style-type: none"> • SEO Override switch is ON • Throttle Pedal >0% 	Shutdown will not occur

Table 1. Operator Override Options

Section 5.14.3.2

Idle Shutdown with Ambient Air Temp

This option allows the override to be disabled based on ambient air temperature. If the upper and lower temperature limits are set and the ambient temperature is within limits, the override will be disabled and the engine will be shutdown after the specified time limit is met. If the ambient air temperature is outside the specified range, the override would be allowed by increasing the percent throttle to greater than 1%.

For example, if the upper limit is set to 80°F and the lower limit is set to 65°F, the override would be disabled if the ambient air temperature was between 65°F and 80°F (see Figure "Ambient Air Temperature Override").

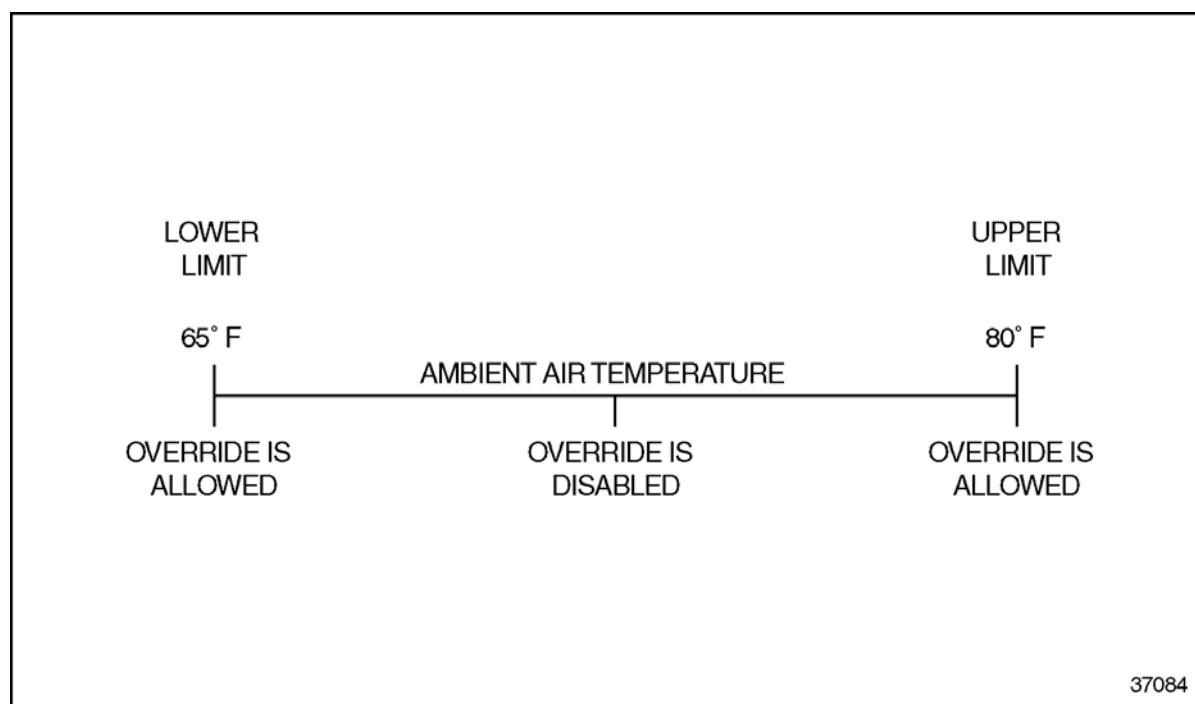


Figure 2. Ambient Air Temperature Override

An ambient air temperature sensor must be installed for this feature.

Section 5.14.3.3

Idle Shutdown with Ambient Air Temp Continuous Override

It is possible for idle shutdown to be overridden continuously based on ambient air temperature. This allows the engine to continue to run while the temperature is such that power from the engine is required to heat or cool the air to keep the cab temperature comfortable.

Continuous override is only available if an ambient air temperature sensor is configured for use (Ambient Air Temp Sensor Enable) and overrides are enabled (Enable Idle PTO Shtdn Override).

There are two modes of operation: operator override and automatic override. In both cases, the override will only be allowed if the ambient air temperature is reading extreme (i.e. it is outside the limits “Lo Amb Air Override Temp” and “Hi Amb Air Override Temp”).

If automatic override is enabled (“Idle Shutdown Auto Override”), idle shutdown will always be overridden while the ambient air temperature is reading extreme. If automatic override is not enabled and operator override is, the operator may explicitly activate the override by pumping the accelerator pedal while idle shutdown is in progress and the CEL is flashing.

Note that the definition of a ‘pump’ of the accelerator pedal depends upon the idle/PTO shutdown mode:

- Idle/PTO shutdown with/without park brake status – in either of these modes, pumping the accelerator pedal is done simply by pressing the pedal.
- Idle/PTO shutdown with edge triggered accelerator pedal – in this mode, pumping the accelerator pedal is done by moving it from below 40% to above 80%.

The continuous operator override will remain active until the ambient air temperature is no longer extreme, the park brake is not applied, the ignition is turned off, or the operator pumps the pedal again. Note that pumping the pedal will only cancel the override if it has already been in effect for at least 10 seconds.

Section 5.14.3.4 Vehicle Power Shutdown

Vehicle Power Shutdown is used with Idle Timer Shutdown or Engine Protection Shutdown. After the idle timer times out or engine protection shuts the engine down, the Vehicle Power Shutdown relay shuts down the rest of the electrical power to the vehicle.

A Vehicle Power Shutdown relay can be installed to shutdown all electrical loads when the engine is shutdown (see Figure "Vehicle Power Shutdown Relay").

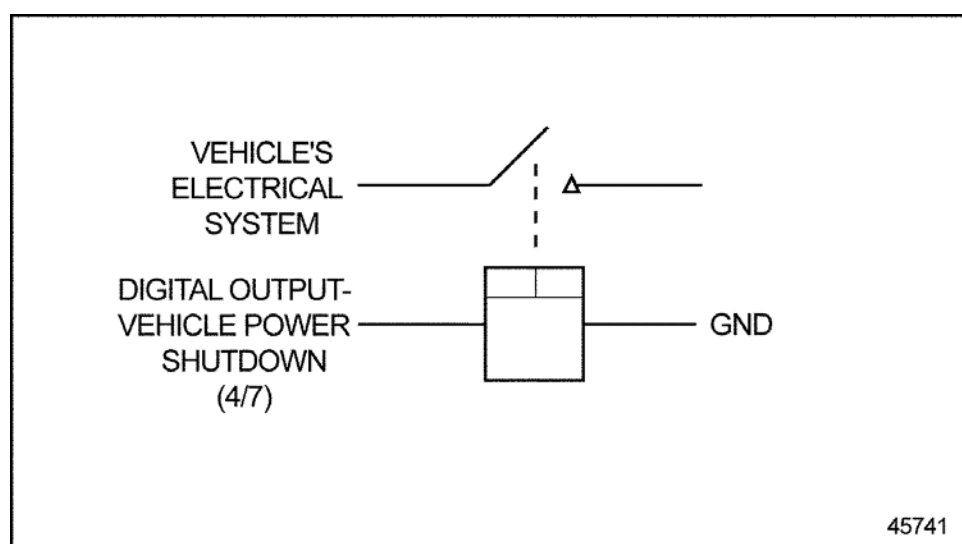


Figure 3. Vehicle Power Shutdown Relay

All electrical loads that should be turned OFF when the engine shuts down should be wired through this relay.

Section 5.14.3.5 Maximum Engine Load Shutdown

This option, when enabled (Max Engine Load for PTO Shutdown), allows the setting of a maximum load above which Idle/PTO Shutdown is disabled.

Section 5.14.4 Programming Requirements and Flexibility

All the Idle Shutdown timer options are listed in Table "Idle Shutdown Timer Programming Options" .

Parameter Group	Parameter	Description	Options	Default	Access
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0 = Disabled

13	1 02 DI Selection	Configure pin 1/02 on CPC2+	1 = Enable Park Brake Interlock 0 = Hardwired	1 = Enable Park Brake Interlock 0 = Hardwired	VEPS, DRS
13	Park Brake Switch Config	Park Brake Configuration	1 = CCVS1 2 = CCVS2 3 = CCVS3 0 = Disable	0 = Hardwired	VEPS, DRS
17	Enable Idle Shutdown	Enables or Disables the Idle Shutdown feature.	1 = Enable with Park Brake 2 = Enable without Park Brake 3 = Enabled with Edge Triggered Accel Pedal	1 = Enable with Park Brake	DDDL, DRS, VEPS
17	Idle Shutdown Time	The amount of engine idle time that is allowed before the Idle Shutdown feature stops fueling the engine.	1 to 5000 seconds 0 = Disable	300 sec.	DDDL, DRS, VEPS
17	Enable PTO Shutdown	Enables or disables the Idle Timer Shutdown feature when operating in PTO mode.	1 = Enable with Park Brake 2 = Enable without Park Brake 3 = Enabled with Edge Triggered Accel Pedal	0 = Disable	DDDL, DRS, VEPS
17	PTO Shutdown Time	The amount of engine idle time that is allowed before the PTO shutdown feature stops fueling the engine.	1 to 5000 seconds	300 sec.	DDDL, DRS, VEPS
17	Min Coolant Temp	Minimum coolant temperature before an idle shutdown will occur	-40°C to 200°C 0 = Disable	10°C	VEPS, DRS
17	Enable Idle PTO Shtdn Override	Enables/disables override of Idle or PTO Shutdown	1 = Enabled, override with throttle pedal, SEO clutch, Service Brake 2 = Enabled, override with throttle	1 = Enabled, override with throttle pedal, SEO clutch, Service Brake	DDDL, DRS, VEPS

pedal, SEO

3 = Enabled,
continuous override
with throttle pedal,
SEO

17	Max Engine Load PTO Shutdown	PTO shutdown disabled for engine loads greater than this value	0–5000 Nm	100 Nm	VEPS, DRS
17	Lo Amb Air Override Temp	Extreme low ambient air temp to allow override.	-40°C – 75°C	-4°C	DDDL, DRS, VEPS
17	Hi Amb Air Override Temp	Extreme high ambient air temp to allow override.	-40°C – 75°C	75°C	DDDL, DRS, VEPS
17	Idle Shutdown Auto Override	Enables auto override of Idle/PTO Shutdown based on ambient air temperature.	0 = No automatic override performed 1 = Automatic override performed	0 = No automatic override performed	DDDL, DRS, VEPS

Table 2. Idle Shutdown Timer Programming Options