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Title: LT with feature code 08TSJ Auto Start Stop Information and Troubleshooting

Applies To: LT with 08TSJ

Change Log

Please refer to the change log text box below for recent changes to this article:

11/20/2018 - Updated feature information under 'Description'; There are separate features for Cummins engines and International engines. Added information for sleeper auto climate which also interacts with auto start/stop.
03/05/2018 - Initial article release

Description

Feature code 0008TSJ for auto start stop is a feature that will allow you to preset values in the body controller to allow the truck to start when the battery voltage or engine oil temperature reaches the preset value. The engine will then run for a preset time after battery voltage is within programmed value (if the engine started for low voltage) or the engine will run until oil temperature reaches a programmed value (if the engine started for oil temperature).

Interlocks (Conditions must be met to allow engine cranking)
• Transmission is in neutral • Shifter is in neutral • Parking brake is set • Clutch is not depressed (for transmissions with clutch pedal) • Hood is closed (hood switch) • Vehicle Speed is less than 2 mph (3 km/h) • Ignition switch is in the OFF position • Auto Start Stop switch is turned ON within 30 seconds of key OFF

Factory Settings for 0597140 - BCM PROG, AUTO START STOP with Switch Control, with Oil Temperature Sensor With Cummins Engine	
Starting for Low Voltage	Starting for Low Oil Temperature
• Low voltage threshold is 12.1v	• Low engine oil temp threshold is 50F

• After battery voltage is under 12.1v for 30 seconds, the horn will chirp, and the engine will start • 5 seconds after the engine starts, the engine speed will increase to 1000rpm • Once battery voltage is 12.7v for 70 minutes continuously AND engine oil is 100F, the engine will return to idle • The engine will idle for 90 seconds before engine shutdown	• After engine oil temp is under 50F for 15 minutes, the horn will chirp, and the engine will start • 5 seconds after the engine starts, the engine speed will increase to 1000rpm • Once engine oil temp is 100F for 1 minute continuously AND battery voltage is 12.7v, the engine will return to idle • The engine will idle for 90 seconds before engine shutdown
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Factory Settings for 0597250 - BCM PROG, AUTO START STOP with Switch Control with International A26 Engines	
Starting for Low Voltage	Starting for Low Temperature
• Low voltage threshold is 12.1v • After battery voltage is under 12.1v for 30 seconds, the horn will chirp, and the engine will start • 5 seconds after the engine starts, the engine speed will increase to 1000rpm • Once battery voltage is 12.7v for 70 minutes continuously AND engine oil is 150F, the engine will return to idle • The engine will idle for 90 seconds before engine shutdown	• Low temp threshold varies based on the ambient temperature at the time auto start was enabled • Time to start decreases at colder ambient temperatures • Timers vary from: ◦ 7 hours ◦ 4 hours ◦ 5.5 hours ◦ 3 hours • 5 seconds after the engine starts, the engine speed will increase to 1000rpm • Once engine oil temp is 150F for 1 minute continuously AND battery voltage is 12.7v, the engine will return to idle • The engine will idle for 90 seconds before engine shutdown

Factory Settings for 0597317 - BCM PROG, AUTO CLIMATE CONTROL for Sleeper with ANY Engine	
• When bunk temperature gets too warm or cold, this feature can request the engine to auto-start to cool or heat the sleeper • This is an optional feature (16VKW) that also interacts with the Auto Start-Stop system	
Starting for High In-Cab Temperature	Starting for Low In-Cab Temperature
• Bunk temperature reaches upper limit (5 degrees above set temperature point) the engine will start and run to cool the sleeper • The engine will run for a 20 minutes, to cool the sleeper. • The engine will remain off for 15 minutes minimum after it shuts down	• Bunk temperature reaches lower limit (5 degrees below set temperature point) the engine will start and run to warm the sleeper • The engine will run for a 20 minutes, to warm the sleeper. • The engine will remain off for 15 minutes minimum after it shuts down
NOTE: When ambient temperatures are 90F or hotter, the engine will run continuously to maintain sleeper temperature	NOTE: When ambient temperatures are 15F or cooler, the engine will run continuously to maintain sleeper temperature

- If ambient temperature falls under 90F, the engine will shut down

- If ambient temperature rises above 15F, the engine will shut down

Troubleshooting

The Body Control Module (BCM) handles all the inputs and controls the outputs for the auto start/stop system, including engine cranking. This is a change from previous models with auto start/stop.

- Open Diamond Logic Builder (DLB) software and connect to the BCM. Open a session for the auto start/stop feature.
 - For assistance in making a session in DLB follow [IK2600008 - How to Diagnose Electrical Problems with Diamond Logic® Builder](#)
- Review the all inputs that could prevent the system from operating properly
 - Was the auto start/stop switched on within 30 seconds of key off?
 - Is the LED indicator on the switch lit solid?
 - Slow flashing (One flash per second) - Interlock is not met
 - Fast flashing (Two flashes per second) - Error condition
 - Is the hood closed, and hood switch has a good status in DLB?
 - Is the park brake set, and has a good status in DLB?
 - Is the clutch pedal released, and has a good status in DLB?
 - Is the current gear Neutral?
 - If the stalk shifter is left in gear the vehicle will not crank
 - Does this vehicle see wheel based vehicle speed? (Transmission or ABS)
 - Transmission output shaft speed (Vehicle_Speed)
 - ABS wheel speed sensor (Front_Axle_Speed)
 - If wheel based vehicle speed is seen during engine cranking, the system will stop engine cranking
 - If wheel based vehicle speed is seen while running, the system will abort auto start and shut down
- If the system is shutting down prematurely, review parameters to verify they are set properly

Parameter Information

- Below are updated ECM and Body Controller Auto Start Stop Default Settings, these settings provide optimal performance.
 - If the customer has Idle Shutdown Enabled, then Idle Shutdown With Parking Brake Set and In PTO must be set to Disable
 - If Idle Shutdown shuts the engine off during an Auto Start event, the Auto Start/Stop system will be disabled.
 - The Diamond Logic Builder (DLB) Parameter list is designed for optimal battery life.
 - Changing the parameters below may result in poor system performance or shortened battery life.

LT with Cummins X15 Auto Start Stop Parameters	
Cummins INSITE	
Idle Shutdown	Enable

• Idle Shutdown Coolant Temperature Threshold	30	°F
• Percent Engine Load	90	Percent
• Time Before Shutdown	00:05:00	HH:MM:SS
• Ambient Temperature Override	Disable	
• Greenhouse Gas Idle Shutdown	Disable	
• Idle Shutdown With Parking Brake Set	Disable	
• In PTO	Disable	
• Manual Override	Disable	
• Shutdown Accessory Relay	Not Installed	
• Warning Period	Disable	
PTO	Enable	
• PTO Speed 1 Device	0	
• PTO Speed 2 Device	0	
• PTO Speed 3 Device	0	
• PTO Speed 4 Device	0	
• PTO Speed 5 Device	0	
• PTO Speed 6 Device	0	
• PTO Speed 7 Device	0	
• PTO Speed 8 Device	0	
• Additional Switch Speed	1000	RPM
• Maximum Engine Load	800	Ft*lb
• Maximum Speed ¹	1800	RPM
• Maximum Vehicle Speed	6	Mph
• Minimum Speed	500	RPM
• Ramp Rate ²	100	Rpm/s
• Resume Switch Speed ³	1000	RPM
• Set Switch Speed ⁴	650	RPM
SAE J1939 Multiplexing		
• PTO On/Off Switch	Enable	
↳	Source Address	33 - Body Controller
• PTO Set/Resume Switch	Enable	
↳	Source Address	33 - Body Controller
- Set 'Maximum Speed' to 1800 RPM so the ECM is not governed at 1000 RPM. - This allows the engine to run at 1000 RPM or above, resulting in consistent engine speed when running in Auto Start Stop. - Maximum Speed cannot be less than 1200 RPM - Set 'Ramp Rate' to 100 rpm/s for a smoother transition of engine speed while ramping. - Set 'Resume Switch' Speed to 1000 RPM - If the momentary press for engine PTO does not happen, the ECM will still ramp the engine speed to 1000 RPM - Set 'Set Switch Speed' to 650 RPM so the initial set message from the BCM to ECM does not cause a sudden increase in engine speed.		

International Diamond Logic Builder (DLB) - LT		
BC PROG, AUTO START STOP with Switch Control	0597041	Installed
• 2530 - Wait To Start Bypass (Figure 1 below)	Checked - Cummins Only	On/Off
• 2536 - Battery Low Trip Point	12.1	V
• 2537 - Battery Run Time	70	min
• 2538 - Engine Idle Delay	90	s
• 2541 - Engine Ramp Delay	5	s
• 2571 - Low Battery Time	30	s
• 2674 - Auto SS Horn Enable	Checked	On/Off
• 2743 - Battery High Trip Point	12.7	V
• 2825 - Eng Oil Temp Enable	Checked	On/Off
• 2829 - Auto SS Start Temperature	50	F
• 2830 - Auto SS Stop Temperature	100.4	F
• 2836 - Cruise Control Set Param	500	ms
• 2837 - Cruise Control Enable Param	1000	ms
• 2838 - Cruise Control Resume Param	1500	ms
• 2839 - Key Chk Time	30	s
• 2861 - Low Temperature Time	15	min
• 2862 - High Temperature Time	1	min
• 2863 - Auto Start Shutdown Time	20	min
• 3193 - Bunk Temp Enable	Checked	On/Off

Figure 1 - LT X15 Parameter

International® Diamond Logic® Builder

File Edit View Advanced Logic Tools Diagnostics Help

Editing - 3HSDZAPR6JN566519

Select Advanced Logic Features Faults Connectors Signals Center Panel Cluster Campaign Messages

Features ESC

Create a diagnostics session of the signals associated with the selected features.

Feature	Description	Installed
0597041	BCM PROG, AUTO START STOP with Switch Control	☒
0597250	BCM PROG, AUTO START STOP with Switch Control w/o Engine Oil Temp Sensor	☐
0597001	BCM PROG, BODY CONTROLLER for Truck	☒
0597002	BCM PROG, COMMON CONFIG DATA	☒
0597003	BCM PROG, IP CONFIGURATION for LT, RH & LoneStar	☒

ID	Parameter	Value	Unit	Description	Cfg. Unit	Cfg. Value
2530	Wait_To_Start_Bypass	☒	On/Off	Enables the wait to start warning light a...	On/Off	1
2536	Battery_Low_Trip_Point	12.1	V	Trip point to indicate when the engine ne...	V/20	242
2537	Battery_Run_Time	70	min	Time that the engine will remain running ...	min	70
2538	Engine_Idle_Delay	90	s	Amount of time before the engine is retur...	timerco...	9000
2541	Engine_Ramp_Delay	5	s	Amount of delay time that is required aft...	timerco...	500
2571	Low_Battery_Time	30	s	This defines the amount of time that the ...	timerco...	3000
2674	Auto_SS_Horn_Enable	☒	On/Off	Parameter to disable/enable the electric ...	On/Off	1
2743	Battery_High_Trip_Point	12.7	V	Trip point to indicate when the batteries...	V/20	254
2825	Eng_Oil_Temp_Enable	☒	On/Off	Parameter enables/disables the engine oil...	On/Off	1
2829	Auto_SS_Start_Temperature	50	F	This parameter provides the trip point fo...	C	10
2830	Auto_SS_Stop_Temperature	100.4	F	This parameter provides the value of engi...	C	38
2836	Cruise_Control_Set_Param	500	ms	time used in engine ramp commands for aut...	timerco...	50
2837	Cruise_Control_Enable_Param	1000	ms	time used in engine ramp for auto start stop	timerco...	100
2838	Cruise_Control_Resume_Param	1500	ms	timing for engine ramp for auto start stop	timerco...	150
2839	Key_Chk_Time	30	s	Specifies the maximum amount of time afte...	timerco...	3000
2861	Low_Temperature_Time	15	min	Amount of time the engine oil must be bel...	min	15
2862	High_Temperature_Time	1	min	Amount of time the engine oil must be abo...	min	1
2863	Auto_Start_Shutdown_Time	20	min	Amount of time after the in switch indica...	min	20
3193	Bunk_Temp_Enable	☒	On/Off	Gen4 Auto Start Stop Bunk Temperature Ena...	On/Off	1

Parameter 2530:
Only Cummins X15 powered vehicles should have this checked

Waiting for connection...

Other Resources

- [Master Service Information Page](#)

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