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DDC-SVC-MAN-0019

Optimized Idle User Manual

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California Proposition 65 Warning and Engine Idle Notice

CALIFORNIA
Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

CALIFORNIA
Engine Idle Limiting Standard Notice

Vehicles with engines certified by the State of California are equipped with software features making them compliant with the California Engine Idle Regulations. In order to meet this regulation, the engine control strategy is generally configured to automatically shut down the engine after five minutes of continuous idle operation. This shutdown feature is not an engine malfunction and is required to meet the California emission regulations.

BEFORE YOU BEGIN

The information in this manual is subject to change without notice. Although every effort was made to ensure that the most current information is made available to you, Detroit Diesel Corporation makes no claims, written or implied, as to the validity of the information contained at time of purchase.

TECHNICAL SUPPORT

If you have difficulties operating Optimized Idle®, contact Detroit Diesel Technical Service.

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ABOUT THIS MANUAL

This manual is designed to be used like any reference book. Please take a few moments to read and familiarize yourself with the basic operation of Optimized Idle.

An understanding of Optimized Idle concepts and terminology will be useful in obtaining the most benefit from this product. Brief definitions of the terminology used with Optimized Idle and throughout this manual can be found in the glossary.

SAFETY PRECAUTIONS

When active, the Optimized Idle system automatically stops and restarts the engine. The alarm will sound briefly prior to any Optimized Idle engine.

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INTRODUCTION TO OPTIMIZED IDLE

Optimized Idle with DDEC software reduces engine idle time by running the engine only when required. Optimized Idle is a system which automatically stops and restarts the engine to accomplish the following:

- Keep the engine oil temperature between factory set limits
- Keep the battery charged
- Keep the cab/sleeper or passenger area at the desired temperature (using the optional thermostat)

Idle time and fuel savings information is available through DDEC Reports. Other benefits include overall reduction in exhaust emissions and noise, and improved starter and engine life (by starting a warm engine and eliminating starting aids). The system also reduces dead batteries due to electrical loads, such as refrigerators or satellite systems. Optimized Idle operates in one of two modes:

- Engine Mode
- Thermostat Mode (includes the same features as Engine Mode)

Engine Mode is used to keep the battery charged and the engine oil temperature between factory set limits. The Optimized Idle Active Light is illuminated whenever Engine Mode is active.

Thermostat Mode is used to keep the cab/sleeper (on--highway truck) and passenger area (coach) at the desired temperature and maintain the Engine Mode parameters. The optional thermostat must be turned ON for Thermostat Mode to be active. The Optimized Idle Active Light is illuminated whenever Thermostat Mode is active.

DDEC software allows the engine brakes to be turned on during shutdown. The amount of engine braking is determined by the dash--mounted engine brake switches. Braking during shutdown reduces cab shake.

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OPERATING OPTIMIZED IDLE

The following conditions must be met to activate Optimized Idle:

- The ignition switch must be in the “ON” position and the engine idling
- Hood, cab, or engine compartment door(s) closed
- Transmission in neutral and in high--range (if equipped)
- Park brake set
- Idle Shutdown Timer must be enabled

NOTE: Keep vehicle park brake properly maintained.

If this vehicle is equipped with Cruise Control, the Cruise Master Switch must be moved to the “ON” position after the vehicle is idling and the above conditions are set. If the Cruise Master Switch is on prior to the vehicle idling, turn it to “OFF.” Turn the Cruise Master Switch to “ON” after the vehicle is idling and the above conditions are met.

NOTE: To disable Optimized Idle, turn off the ignition, turn the Cruise Master Switch OFF, or use the drive away feature (Section 6, Refer to section "DRIVE AWAY"). If the engine is not running, pressing the clutch (optional) will disable Optimized Idle. The Optimized Idle active light is on when Optimized Idle is active.

NOTE: The transmission lever should not be moved while Optimized Idle is active, since this could disable Optimized Idle. If the lever is moved, verify that the transmission is not in gear and that Optimized Idle is still active.

The engine compartment alarm sounds briefly prior to any Optimized Idle engine start. After Optimized Idle starts the engine, the speed will be increase to the parameterized target RPM (default = 1000, 900 if equipped with Clean Idle option). Once the above conditions are met:

- The Optimized Idle active light will flash
- The active light will stop flashing and stay on after the idle shutdown timer expires

The Optimized Idle active light flashing indicates that Optimized Idle will begin operation after the idle shutdown timer expires. When the active light stops flashing and stays on (after the idle shutdown timer expires) the operator can no longer use other DDEC features, including the foot pedal. This condition continues until the park brake is released, the hood or engine compartment door(s) is opened, the transmission is put in gear, or the Cruise Switch is turned off. Optimized Idle may continue to run the engine to warm--up the engine, or heat (cool) the interior. Optimized Idle will shut down the engine when the battery voltage, engine temperature, or cab temperature values are met. The engine will restart only when the ECM determines that the engine needs to start to charge the battery, warm the engine, or heat (cool) the interior.

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ENGINE MODE

Optimized Idle will stop and restart the engine only as necessary, to keep engine temperature between 60°F (16°C) and 104°F (40°C) (factory set limits) and to keep the battery charged. When Optimized Idle starts due to low battery voltage (less than 12.2 V on a 12 V system, the engine will run for a minimum of two hours.

For Engine Mode to function, all of the conditions listed at the beginning of Section 3, Refer to section "OPERATING OPTIMIZED IDLE" must be met. Use the following procedure to start Engine Mode:

1. Start the engine and let it remain idling.
    a. Close and secure the hood, cab or engine compartment door(s).
    b. Put the transmission in neutral and in high-range (if equipped).
    c. Apply the parking brakes.
2. If you have Cruise Control, turn the Cruise Master Switch to the "ON" position. If the switch is on, turn it off and on after the vehicle is idling.
3. The Optimized Idle active light flashes.

NOTE: If the engine does not start after the second Optimized Idle attempt, or if the vehicle moves while Optimized Idle is enabled, the Amber Warning Lamp (AWL) will turn on to indicate that Optimized Idle has been disabled (active light will turn off). The ignition must be turned to the "OFF" position, the engine restarted, and the conditions in the beginning of Section 3, Refer to section "OPERATING OPTIMIZED IDLE" met in order to enable Optimized Idle.

4. When the idle shut down timer expires, the Optimized Idle light will stop blinking and remain on. The engine will stop and restart as needed. Optimized Idle is now in Engine Mode.

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THERMOSTAT MODE (WITH THE OPTIONAL OPTIMIZED IDLE THERMOSTAT)

This mode allows the operator to set the desired interior temperature and maintain Engine Mode parameters.

For additional thermostat features, Refer to section "THERMOSTAT OPERATION". The Optimized Idle thermostat is used to determine when the engine needs to restart to maintain the interior temperature. For Thermostat Mode to function, all of the conditions listed in the beginning of Section 3, Refer to section "OPERATING OPTIMIZED IDLE" must be met. Use the following procedure to start Thermostat Mode:

1. Start the engine and let it remain idling.
    a. Close and secure the hood cab, or engine compartment door(s).
    b. Put the transmission in neutral and in high-range (if equipped).
    c. Apply the parking brake.
2. If you have cruise control, turn the cruise master switch to the "ON" position. If the switch is on, turn it off and on after the vehicle is idling.
3. The Optimized Idle active light flashes.
4. Set the heater or air conditioning to maximum. Set the heater or A/C fan controls on the dash and sleeper area to high. This will minimize engine run time.
5. Turn the thermostat on by pressing any button on the display.
6. Select cool or heat by pressing the buttons. This must match the setting on the heating and A/C controls set in step 4.
7. Set the desired interior temperature.
8. Optimized Idle will now stop and restart the engine, only when required, to keep the interior at the desired temperature. When the interior requires heating or cooling, the (heat) or (cool) icon will flash.

NOTE: If the engine does not start after the second Optimized Idle attempt, or if the vehicle moves while Optimized Idle is enabled, the Amber Warning Lamp (AWL) will turn on to indicate that Optimized Idle has been disabled (active light will turn off). The ignition must be turned to "OFF", the engine restarted, and the conditions in the beginning of Section 3, Refer to section "OPERATING OPTIMIZED IDLE"met in order to enable Optimized Idle.

9. When the engine starts, it will ramp up to increase to the parameterized target RPM (default = 1000, 900 if equipped with Clean Idle option) and the fan and accessories will turn on approximately 30 seconds after the engine starts. To turn off the thermostat and exit the Thermostat Mode, press and hold the mode button for 3 seconds. Optimized Idle is now in Engine Mode.

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Continuous Run Condition and Extended Idle Condition

Under normal conditions, the engine will cycle on and off to keep the interior at the desired temperature. Two automatic conditions which help keep the operator comfortable and reduce engine cycling are described in the next sections.

Continuous Run Condition

This condition allows the engine to run continuously if the outside temperature parameter exceeds the parameterized limits (hot and cold) and the thermostat set point can not be met (factory default is 25°F (-4.00°C) for cool mode and 90°F (32°C) for heat mode). When the thermostat is in the Continuous Run Condition, the temperature icon will flash along with the heat or cool icon.

Extended Idle Condition

NOTE: If Optimized Idle enters the extended idle condition, it may be an indication that the heat or cool setting on the thermostat does not match the vehicle heating or cooling system setting. It could also be an indication of low freon, blockage in the heater system, or system tampering.

If the Continuous Run Condition is not needed and the thermostat set point is not met within 45 minutes, the engine will shut down for 15 minutes, restart and run for 15 minutes. This 15 minute on and off cycle will continue until the thermostat set point is reached or until the thermostat is turned off.

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DRIVE AWAY

Drive away disables Optimized Idle and allows the vehicle to be driven without cycling the ignition. Drive away allows the use of DDEC features such as Variable Speed Governor (VSG) or cruise VSG.

When the engine is running with Optimized Idle active:

1. Release the parking brake, put the transmission into gear, or turn off the Cruise Switch.

2. Let the engine return to base idle. When the engine returns to base idle the active light will turn off.

If the engine is not running:

1. Start the engine.

2. Release the parking brake, put the transmission into gear, or turn off the Cruise Switch, and the active light will turn off. The operator may now use all DDEC features.

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THERMOSTAT OPERATION

The optional thermostat is used to determine if the interior needs heating or cooling. Figure 1 shows the thermostat and icons.

BASIC BUTTON FUNCTION

Button names and symbols printed on the front of the thermostat module are for the primary functions. If any of the system parameters are changed, values are saved when MODE or is pressed or when the display automatically returns to the main screen. The display will then show the cab/sleeper temperature.

Table 1.

	Up button: Increases the set point, comfort zone, password, and continuous run limits.
	Down button: Decreases the set point, comfort zone, password, and continuous run limits.
	Cool/Heat button: Selects either heating or cooling operation. This must match the setting of the tractor heating/air conditioning controls. It will also return the user to the main display when pressed.
MODE	Mode button: Scrolls through the various functions and can be used to set desired values.

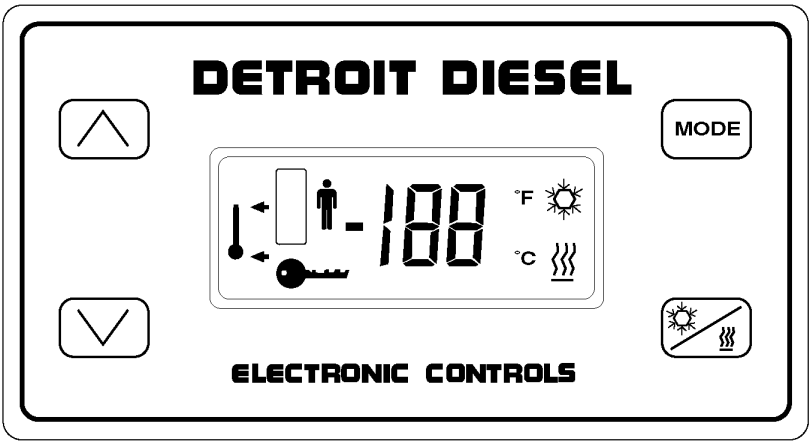

Figure 1. Optimized Idle Buttons and Icons

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Table 2.

	Up button	°F	Temperature in Fahrenheit indicator
	Down button	°C	Temperature in Celsius indicator
	Temperature bulb icon		Cooling mode indicator
	Upper value icon		Heating mode indicator
	Lower value icon	MODE	Mode button
	Password mode icon for DDC distributors		Cool/Heat selection button
-188	Temperature display		Outside Temperature Parameter

This is the Main Display

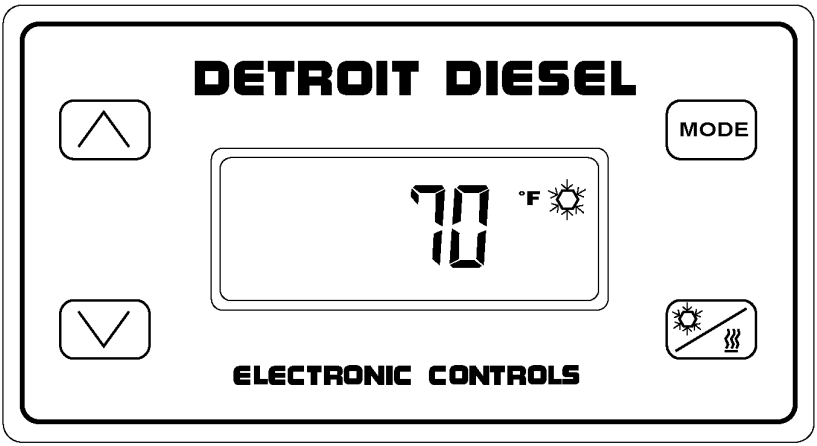

Figure 2. The Main Display

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When the ignition switch is turned to the "ON" position, the cab thermostat is ready for use. Pressing *any button* will turn the thermostat on and enable the thermostat mode. The display will show the cab temperature (in °F or °C) and the last heating or cooling mode (or) selected. The or icon may be flashing to indicate that the cab/sleeper requires heating or cooling.

To turn off the thermostat and exit Thermostat Mode, press and hold MODE for three (3) seconds. Optimized idle is now in Engine Mode.

SETTING THE DESIRED SET POINT

This section describes how to set the desired interior temperature. There are different temperature set points for the heating mode and cooling mode.

1. Press up or down button, the display will flash the current set point and show:
    a. The upper value icon, with the arrow flashing, for the heating set point.
    b. The lower value icon, with the arrow flashing, for the cooling set point.
2. Press the up or down button to increase or decrease the set point. Holding the up or down button causes the digits to increase or decrease rapidly.
3. Release the up or down button and the interior temperature display will return in three seconds and the set point will be stored in memory.

SELECTING THE HEATING OR COOLING MODE

With the Main Display showing the interior temperature, press the Cool/Heat selection button until the desired icon is showing. The Cooling Mode indicator icon indicates the cooling mode, the Heating Mode indicator icon indicates the heating mode.

This setting must match the setting of the vehicle heating/cooling system.

NOTE: Improper selection of the heating mode or cooling mode could cause Optimized Idle to enter the extended idle condition. At that point, the engine will run for 45 minutes, then stop and restart at 15 minute intervals until the thermostat set point is reached or until the thermostat is turned off or the proper heat or cool mode is selected.

SELECTING THE COMFORT ZONE

The Comfort Zone is the number of degrees (Celsius or Fahrenheit) from the Optimized Idle thermostat set point before the interior temperature is low or high enough to indicate that the engine needs to heat or cool the vehicle. The larger the

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Comfort Zone, the longer the time between Thermostat Mode engine starts. The operator may select one of three different Comfort Zones, 4°F (2°C),7°F (4°C), or 10°F (6°C).

Select a Comfort Zone as follows:

1. Press the mode until the Temperature bulb icon displays with the arrows flashing. The display flashes the current Comfort Zone selected.
2. Use the up or down button or to select a Comfort Zone setting.

NOTE: When the up or down button is released, the new value will be set when the display returns to the Main Display (interior temperature) after five seconds or when the Cool/Heat selection button or Mode button is pressed.

3. Press the Cool/Heat selection button to return to the main display or press the Mode button to select metric or English units.

SELECTING ENGLISH OR METRIC UNITS

The thermostat will display the temperature in either Fahrenheit (F) or Celsius (C). Press the Mode button until only the Fahrenheit or Celsius icon is flashing. Press the Up or Down button to change to the desired units. The thermostat returns to the main display five seconds after the button is released or when the Cool/Heat selection button is pressed.

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THERMOSTAT OPERATION FLOW CHARTS

The following flow charts show the thermostat operation (see Figure 3).

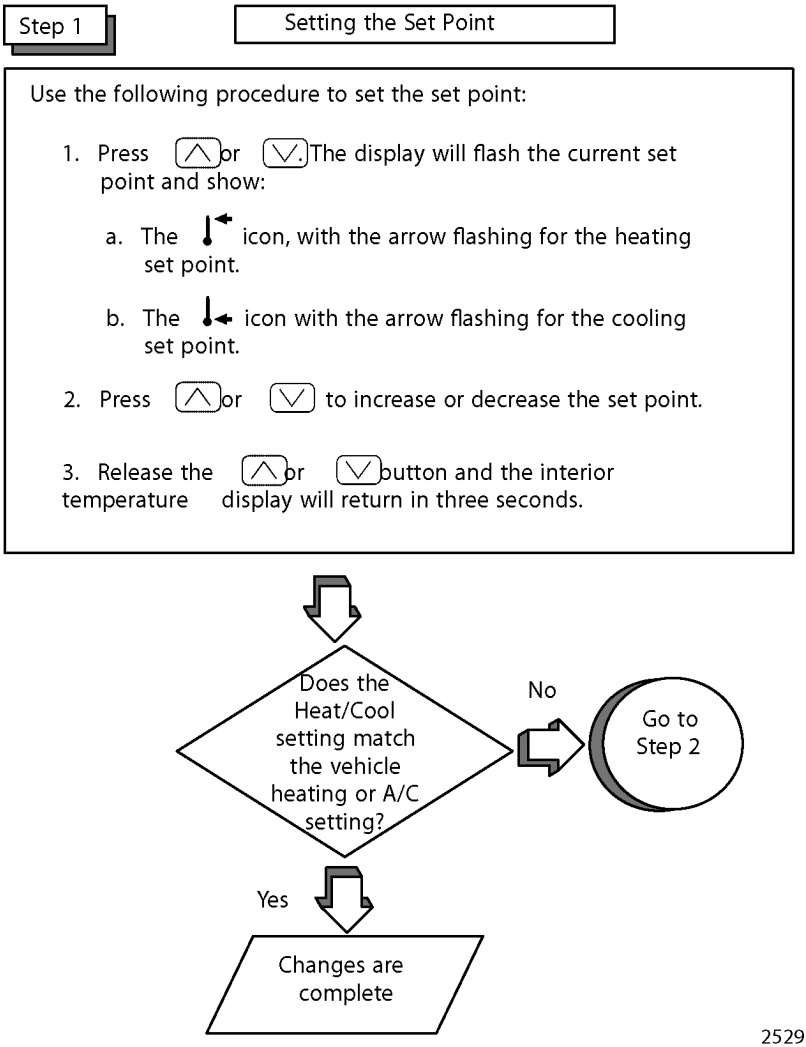

Figure 3. Step 1, Setting the Set Point

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Step 2

Select Heat/Cool Mode

To select Heat or Cool Mode:

1. Press until the desired icon is showing.
   a. indicates the cooling mode.
   b. indicates the heating mode.
2. Press MODE until the or icon displays with the arrows flashing. The display flashes the current Comfort Zone.

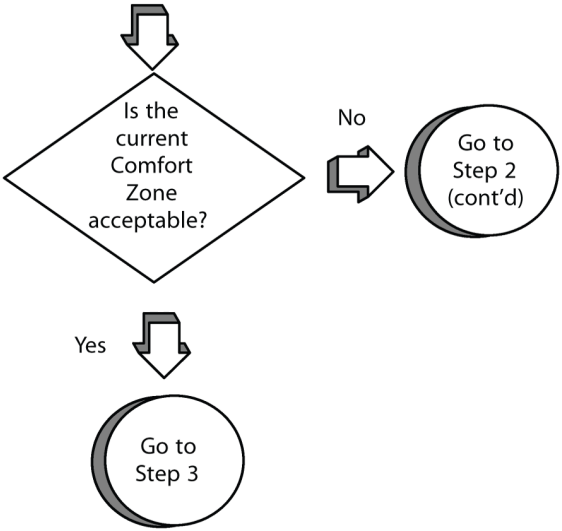

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Figure 4. Step 2, Change Comfort Zone

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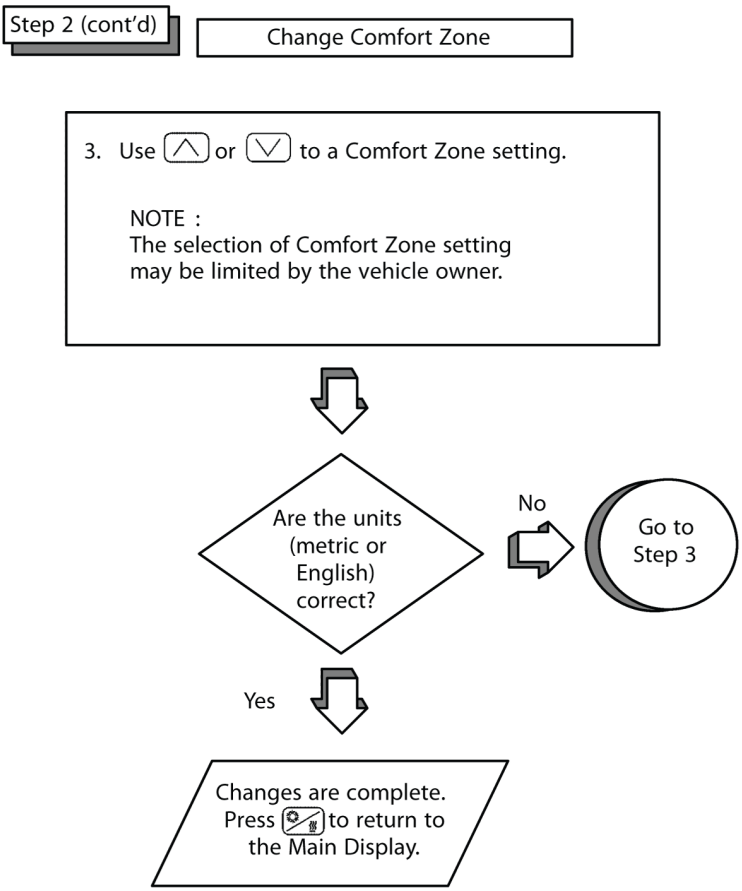

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Figure 5. Step 2 (cont'd), Change Comfort Zone

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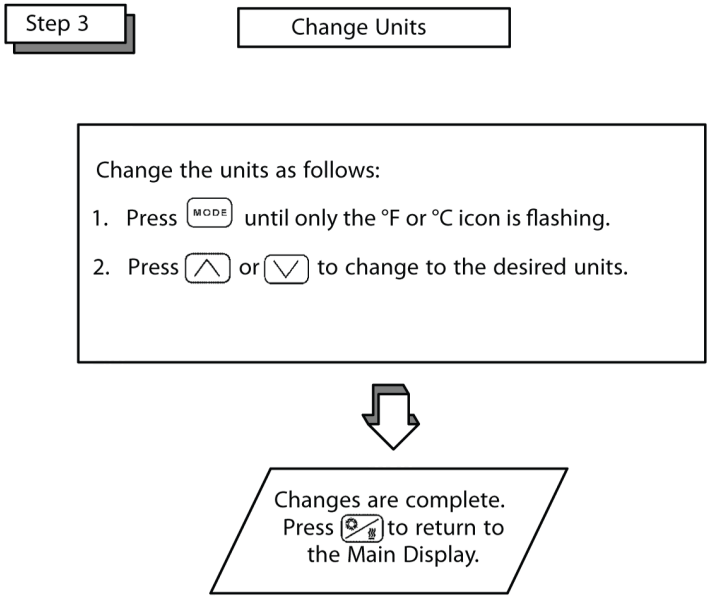

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Figure 6. Step 3, Change Units

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OPERATING INFORMATION

The following describes the Operating Information.

USING DDEC Reports

DDEC software allows the ECM to collect and store operating data known as DDEC Reports. Optimized Idle information is included. DDEC Reports extracts the data when the PC is plugged into the vehicle's diagnostic connector.

DDEC Reports

DDEC Reports analyzes and reports the Optimized Idle data for a specific trip, monthly activity and life--to--date as listed in the Table.

Table 3.

Optimized Idle Time	
Active	Amount of time the Optimized Idle system is enabled.
Run	Amount of time the engine is running in Optimized Idle Mode.
Battery	Amount of time the engine is running for the battery voltage.
Engine Temp	Amount of time the engine is running for oil temperature.
Thermostat	Amount of time the engine is running for the cab temperature.
Extended Idle	Amount of time the engine is running in Extended Idle Mode.
Continuous	Amount of time the engine is running in Continuous Mode.

PASSWORD PROTECTION FOR THERMOSTAT SETTINGS

The Optimized Idle thermostat settings are protected by a password that can be installed by the fleet management, refer to the thermostat reprogramming guide, 18SA366 or call the Detroit CSC for further assistance with this.

PROGRAMMING LIMITS AND NEW PASSWORD

Specific parameters in the thermostat can be modified to meet the customer’s requirements. A password is required to change the following:

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- Upper limit for Continuous Run Heat Mode
- Lower limit for Continuous Run Cool Mode
- Configuration of the minimum comfort zone
- Configuration of the minimum Cool Mode temperature limit
- Configuration of the maximum Heat Mode temperature limit
- Password modification

Password Entry

The password is displayed in two segments. The first segment is “XX”, and the second segment is “--XX”. All four values must be correct to enter the protected menu.

To enter the password :

NOTE: This screen is only displayed for two seconds if no buttons are pressed. The correct password must be entered quickly.

1. Press MODE until the icon is displayed. The first digit will flash.
2. Use ∧ or ∨ to enter the first digit.
3. Press MODE and the second digit will flash.
4. Use ∧ or ∨ to enter the second digit.
5. Press MODE and the "-" icon displays with the third digit.
6. Use ∧ or ∨ to enter the third digit.
7. Press MODE and the fourth digit will flash.
8. Use ∧ or ∨ to enter the fourth digit.
9. Press MODE and the password will be compared to the one in memory.

If the wrong password is entered or no buttons are pressed in two seconds, the display will return to the Main Display (vehicle interior temperature).

NOTICE: DDC Technical Service must be contacted for the backdoor password. You must have ready the password code that is flashed when the wrong password is entered, when contacting technical service.

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Setting Limits for Continuous Run Condition

The values for high temperatures and low temperature allow the engine to run continuously to heat or cool the vehicle interior, when outside temperatures exceed set limits. The values set in this section are a guideline. Factors such as sunload, vehicle body style, and location may affect these values. The factory default settings are 32°C (90°F) for the upper limit, and -3°C (25°F) for the lower limit.

1. Press MODE until the icon is displayed and enter the correct password. Entering the wrong password will either flash a password code back to the user or return the user to the Main Display. Refer to section "Password Entry".

2. Press MODE after the password is entered, and the display will show the current outside temperature and the and icons. This value is shown to help determine the desired upper and lower temperature limits for the Continuous Run condition.

3. Press MODE until the and icons are displayed with the icon and the numbers flashing.

4. Use or to change the high limit. Temperatures above this value allow the engine to run continuously, if needed, to keep the vehicle interior cool. The range for this setting is 26 - 48°C (80 -120°F).

5. Press to save your changes and return to the Main Display. Press MODE to continue to make other limit changes.

6. Press MODE and and are displayed with and the numbers flashing.

7. Use or to set the lower limit. If the outside temperature falls below this value, the engine is allowed to run continuously, if needed, to heat the vehicle interior. The range for this setting is -15 to -1°C (5 - 30°F).

8. Press to save your changes for Continuous Run and return to the Main Display. Press MODE to continue to change other limits.

Setting the Minimum Comfort Zone

The Comfort Zone is the number of degrees (Celsius or Fahrenheit) from the Optimized Idle thermostat set point before the engine runs to heat or cool the vehicle interior. The larger the Comfort Zone, the longer the time between Thermostat Mode engine starts. The minimum Comfort Zone can be set and the driver will not be able to choose a Comfort Zone lower then the minimum set.

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1. At the Main Display, press MODE until the icon is displayed and enter the correct password. Entering the wrong password will flash a password code back to the user or return the user to the Main Display. Refer to section "Password Entry".

2. Press MODE until and are displayed and the arrows, and number are flashing.

3. Use or to change the minimum Comfort Zone. The minimum limit can be set to 4 - 7 - 10. If the limit is set to 4, the driver can choose 4 - 7 - 10. If the minimum is set to 7, the driver can choose 7 or 10. If the minimum is set to 10, the driver is left with 10 as the only choice.

4. Press to save your changes for Continuous Run and return to the Main Display. Press MODE to continue to change other limits.

Setting the Minimum Cool Mode Temperature Limit

Set the temperature limit as follows:

1. At the Main Display, press MODE until the icon is displayed and enter the correct password. Entering the wrong password will flash a password code back to the user or return the user to the Main Display. Refer to section "Password Entry".

2. Press MODE until , , and are displayed and , and the number are flashing.

3. Use or to change the minimum Cool Mode temperature limit. Any temperature above this limit can be used by the driver to set the thermostat for Cool Mode. The range for this setting is 15 - 23°C (60 - 75°F).

4. Press to save your changes for Continuous Run and return to the Main Display. Press MODE to continue to change other limits.

Setting the Maximum Heat Mode Temperature Limit

1. At the Main Display, press MODE until the icon is displayed and enter the correct password. Entering the wrong password will flash a password code back to the user or return the user to the Main Display. Refer to section "Password Entry".

2. Press MODE until , , and are displayed and and the number are flashing.

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3. Use ⋀ or ⋁ to change the maximum Heat Mode temperature limit. Any temperature below this limit can be used by the driver to set the thermostat for Heat Mode. The range for this setting is 21 -- 29°C (70 -- 85°F).

4. Press to save your changes for Continuous Run and return to the Main Display. Press MODE to continue.

Modifying the Password

1. At the Main Display, press MODE until the icon is displayed and enter the correct password. Entering the wrong password will either flash a password code back to the user or return the user to the Main Display. Refer to section "Password Entry".

2. Press MODE until and are displayed with the first digit flashing.

3. Use ⋀ or ⋁ to change the first digit of the password then press the MODE button.

4. Use ⋀ or ⋁ to change the second digit of the password then press the MODE button.

5. Use ⋀ or ⋁ to change the third digit of the password then press the MODE button.

6. Use ⋀ or ⋁ to change the fourth digit of the password then press the MODE button.

7. The and icons are displayed with the first digit flashing. You will need to re--enter the new password again for verification, using steps 3 - 6. If the wrong “new” password is entered incorrectly, the old password is kept and the display returns to the Main Display.

8. Once the new password is entered correctly, the thermostat will flash the first two digits and then flash the second two digits. At this point the new password has been saved.

9. Write down the password for future reference.

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THERMOSTAT CARE

The lens over the thermostat LCD display is made of Acrylic material.

NOTICE: Do not use ammonia based cleaners, lacquer thinners, turpentine and other chemicals to clean the Optimized Idle thermostat lens. These chemicals can damage the lens.

Do not wipe while dirt or other gritty material is on the lens. Take care not to scratch the lens.

NOTICE: Do not allow any liquid to enter the vents on the side of the thermostat. Liquid entering these vents may cause damage to the thermostat and affect thermostat operation.

Clean the thermostat lens with a mild non--abrasive soap and water solution and a soft, clean, lint--free cloth.

The thermostat has vents on the sides to allow air into the thermostat.

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OPTIMIZED IDLE INTEGRATION WITH ParkSmart™

Optimized Idle Integration with ParkSmart™

When the driver initiates the O/I, the ParkSmart will operate in O/I mode as follows:

- The ParkSmart runs unless the ParkSmart fan speed control knob is turned to the "OFF" position. The fan speed control knob must be set at "1" or higher.
- The engine will periodically start and run for at least two hours to maintain battery voltage then shut off. The ParkSmart will continue to operate during this time.
- If O/I shuts down due to a fault in the O/I system, ParkSmart will continue to operate until it is shut off by the driver or one of the automated fail-safes.
- The ParkSmart ON/OFF button and LED indicator on the parked HVAC control module do not function when the vehicle is in O/I mode. When the vehicle is not in O/I mode, the ParkSmart ON/OFF button and LED indicator operate normally.

NOTE: Vehicles equipped only with the ParkSmart Auxiliary HVAC System have an additional bank of batteries separate and dedicated to the HVAC. If Optimized Idle is also installed then all batteries are combined.

For more information see the Climate Control section of the Freightliner Cascadia® Driver's Manual.

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CUSTOMER ACCESSIBLE PARAMETERS

Customer Accessible Parameters

Table 4.

Parameter Name	Default Value	Description
OI Target Engine RPM ae 0	1000.0 RPM	See table below
OI Target Engine RPM ae 1	1000.0 RPM	
OI Target Engine RPM ae 2	1000.0 RPM	
OI Target Engine RPM ae 3	1000.0 RPM	
OI Target Engine RPM ae 4	1000.0 RPM	
OI Lower Limit Continuous Run	-4.00°C	Limit for disabling OI Thermostat Mode.
OI Upper Limit Continuous Run	32.00° C	
OI Thermostat Max Time	0 s	Maximum amount of time the engine can run in Thermostat Mode. (0 = infinite)
OI Enable Therm Ext Mode	**R33 and earlier:** 0 disable	Configures the feature of disabling OI Thermostat Mode based on ambient air temperature.
	R34 and later: 0 Normal OI Thermostat Mode	
OI Alternate Battery Run Time	0 s	Sets the alternate run time for battery starts.
OI Extended Mode Disable	0 enable	Status of OI Extended Idle Mode.
OI Continuous Batt Time Enable	0 disabled	If OI has started the engine for battery voltage three consecutive times, the engine will run continuously in OI Mode.
OI Variable Volt Thresh Enable	0 disabled	Battery voltage threshold will be based on ambient air temperature.

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Table 5.

OI Target Engine RPM	
Ambient Air Temperature	OI Target Engine RPM
-40°C (-40°F)	OI Target Engine rpm ae 0
-17.77°C (0°F)	OI Target Engine rpm ae 1
4.44°C (40°F)	OI Target Engine rpm ae 2
26.66°C (80°F)	OI Target Engine rpm ae 3
48.86°C (120°F)	OI Target Engine rpm ae 4

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GLOSSARY

Table 6.

Alarm	An alarm mounted in the engine compartment used to alert persons in the immediate area that the engine is about to start.
Active Light	A dash--mounted light, labeled **Idle Management**, located on the right side of the dash cluster indicates that Optimized Idle is arming (flashing light) or that the system is active (Light glowing steady).
Amber Warning Lamp (AWL)	A panel mounted yellow indicator light. Provided by the vehicle OEM as standard.
Continuous Run Condition	Allows the engine to run continuously under extreme outside temperature.
Comfort Zone	The number of degrees (Celsius or Fahrenheit) from the Optimized Idle thermostat set point before the interior temperature is low or high enough to indicate that the engine needs to heat or cool the vehicle. The larger the comfort zone, the longer the time between thermostat mode engine starts. Example: The thermostat is set in the heat mode at 68°F (20°C), with the comfort zone at 4°F (2°C). The engine will start when the temperature reaches 64°F (18°C) and run until the temperature reaches 68°F (20°C).
CPC2	The CPC2+ is the interface between the MCM2 and the vehicle/equipment for engine control and manages other vehicle/ equipment functions.
Cruise Master Switch	The main switch used to turn on cruise control. This switch is also used to turn on Optimized Idle.
Detroit DiagnosticLink ®	Used for diagnostic purposes. Contains DDEC Reports to analyze the data collected and stored by the CPC.
ECM Electronic Control Module	Engine Mode Allows Optimized Idle to stop and restart the engine to maintain the engine temperature between factory set limits and keep the battery charged.

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Extended Idle Condition	If the continuous run condition is not needed and the thermostat set point is not met within minutes, the engine shuts down for 15 minutes and then restarts and runs for 15 minutes. This cycle (15 minutes on, 15 minutes off) will continue until either the thermostat set point is reached or Optimized Idle is turned off.
Hood/Cab Open Switch	A hood mounted switch used to indicate if the hood/cab is open.
Idle	Engine running on low speed governor and the vehicle not moving.
Idle Shutdown Timer	Allows the engine to shutdown after a customer set time expires while idling (low idle, high idle, or VSG).
Liquid Crystal Display (LCD)	The Optimized Idle thermostat uses a liquid crystal display.
MCM2	The engine mounted Motor Control Module2 (MCM2) includes control logic to provide overall engine management.
Neutral Switch	A transmission--mounted switch used to indicate when the transmission is in neutral.
Park Brake Switch	An air line mounted switch used to indicate that the tractor parking brake is set.
RPM	Engine revolutions per minute.
Set Point	The desired interior temperature set on the thermostat.
Thermostat	A cab/sleeper or dash mounted device which displays the interior temperature and is used to set the desired temperature set point and comfort zone.
Thermostat Mode	Allows Optimized Idle to start and restart the engine to maintain the desired interiortemperature, as well as keep the engine temperature between factory set limits and the battery charged .
VSG and VSG (PTO)	Engine running above the low speed governor on the variable speed governor (previously PTO).
VSS	Vehicle Speed Sensor.

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