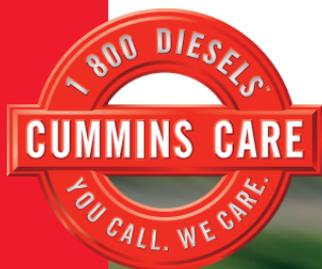




Driver Tips.

For Cummins On-Highway Heavy-Duty
And MidRange Engines With Aftertreatment.



This guide covers engine, aftertreatment and emissions-related indicator lamps* found on your vehicle's instrument panel, and explains what they mean and the actions drivers need to take when they illuminate. Important information about fuel, oil, Diesel Exhaust Fluid (DEF) and operating tips is also included.

General Engine Indicator Lamps.



Check Engine Lamp Or Amber Warning Lamp

The Check Engine Lamp (which may also be referred to as the Amber Warning Lamp) illuminates to remind the driver of scheduled maintenance due. It will flash for 30 seconds after the engine ignition event and remain illuminated, indicating that the engine needs service at the first available opportunity.



Stop Engine Lamp

The red Stop Engine Lamp indicates, when illuminated, that the vehicle needs to be stopped as soon as it is safe to do so.

On-Board Diagnostics.

Every 2013 and newer engine includes On-Board Diagnostics as a part of the emissions regulation requirement. On-Board Diagnostics monitors all emissions-related engine systems during operation. If the system detects any emissions-related malfunctions, it will alert the operator to the detected malfunction through a dash lamp known as the Malfunction Indicator Lamp (MIL).



Malfunction Indicator Lamp (MIL)

The MIL illuminates when the On-Board Diagnostics system detects a malfunction related to the emissions control system. The illuminated MIL indicates that the engine and aftertreatment system should be diagnosed and serviced at your next available opportunity. The MIL can be illuminated along with any of the engine indicator lamps.



If the MIL is illuminated with the red Stop Engine Lamp, the vehicle should be stopped as soon as it is safe to do so. It should then be taken to an authorized Cummins location for repair.

*Lamps shown are for illustrative purposes only. Be sure to reference your vehicle manufacturer's Owners Manual for specific lamps and details.

Diesel Exhaust Fluid (DEF) For Selective Catalytic Reduction (SCR) Aftertreatment.

Every 2010 and newer vehicle has an on-frame storage tank for DEF and a dash lamp that indicates low DEF levels. Refilling this tank with DEF is critical in order for your vehicle to comply with U.S. Environmental Protection Agency (EPA) emissions regulations.

Diesel Exhaust Fluid (DEF) Lamp



Illuminated

An illuminated DEF Lamp is an indication that the DEF level is low. This can be corrected by refilling the DEF tank with Diesel Exhaust Fluid.



Flashing

A flashing DEF Lamp indicates that the DEF level has fallen below a critical level. This can be corrected by refilling the DEF tank.



Flashing DEF Lamp With Check Engine Lamp/ Amber Warning Lamp

A flashing DEF Lamp combined with an illuminated Check Engine Lamp/Amber Warning Lamp indicates that the DEF level is critically low, and you will experience a power loss. Normal engine power will be restored after refilling the DEF tank.



Flashing DEF Lamp With Check Engine Lamp/ Amber Warning Lamp And Stop Engine Lamp

When your DEF gauge reads zero and the engine has been shut down, has idled for one hour after the DEF tank has been run dry, or if the vehicle's diesel fuel tank is refilled without refilling the DEF tank, the Stop Engine Lamp will also be illuminated, along with the flashing DEF Lamp and the illuminated Check Engine Lamp/Amber Warning Lamp. Engine power will continue to be reduced automatically. The vehicle will also be limited to a speed of 5 mph (8 kph). Normal engine power and vehicle speed will be restored after refilling the DEF tank.



Diesel Particulate Filter (DPF).

The DPF is an integral component of the aftertreatment system on every 2007 and newer vehicle. It captures Particulate Matter (PM) in a wall-flow ceramic filter. The exhaust system periodically undergoes regeneration, raising temperatures to oxidize captured PM and clean the system. Lamps alert the driver when a regeneration is needed.



High Exhaust System Temperature (HEST) Lamp

The HEST Lamp illuminates to indicate that high exhaust temperatures may exist due to aftertreatment regeneration. This is normal and does not signify the need for any kind of vehicle service or engine service. When this lamp is illuminated, ensure that the exhaust pipe outlet is not directed at any combustible surface or material. Reference your Cummins Owners Manual for complete instructions.



Aftertreatment Diesel Particulate Filter (DPF) Lamp

Illuminated

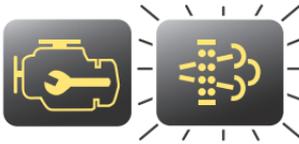
The Aftertreatment DPF Lamp indicates, when illuminated or flashing, that the Aftertreatment DPF requires regeneration. This is accomplished by the following:

1. If the vehicle is equipped with a Regeneration Inhibit Switch, ensure that the switch is not in the Inhibit position.
2. Perform a DPF regeneration by one of the following methods:
 - a. Change to a more challenging duty cycle – such as highway driving – for at least 20 minutes to increase exhaust temperatures.
OR
 - b. Perform a parked regeneration.



Flashing

If a regeneration is not performed in a timely manner after the DPF Lamp is illuminated, the DPF Lamp will begin to flash. This indicates a higher level of PM in the DPF. In addition, engine power may be reduced automatically.



Flashing With Check Engine Lamp/Amber Warning Lamp

A flashing DPF Lamp combined with an illuminated Check Engine Lamp/ Amber Warning Lamp indicates that the aftertreatment DPF needs regeneration immediately. Engine power will be reduced automatically. A parked regeneration is required.



Stop Engine Lamp

If a parked regeneration is not performed, the red Stop Engine Lamp will illuminate. As soon as it is safe to do so, the vehicle should be stopped. It should then be taken to an authorized Cummins location for repair.

Regeneration Inhibit Switch

The purpose of this switch is to prevent or disable aftertreatment DPF regeneration. Reference the vehicle Owners Manual for complete operation and use of this switch. Unnecessary or excessive use of the Regeneration Inhibit Switch will result in a loss of fuel economy, or an increased need for parked regeneration.

How To Perform A Parked (Stationary) Regeneration.

If the vehicle has a Manual Regeneration Switch and the DPF Lamp is flashing:

- Park vehicle in an appropriate location, set parking brake, and place transmission in Park (if provided) or Neutral, and allow up to one hour for the regeneration.
- Set up a safe exhaust area. Confirm that nothing is on or near the exhaust system surfaces.
- Ensure that your fast-idle and Power Take-Off (PTO) switches are off before starting regeneration.
- Push the Manual Regeneration Switch to begin a parked regeneration. Note: Engine speed will increase, and there may be a noticeable change to the sound of the turbocharger during the regeneration process. Once the DPF is regenerated, the engine will automatically return to the normal idle speed.
- Monitor the vehicle and surrounding area during regeneration. If any unsafe condition occurs, shut off the engine immediately. To stop a parked regeneration, depress the clutch, brake or throttle pedal.
- Once regeneration is complete, exhaust gas and exhaust surface temperatures will remain elevated for 3 to 5 minutes.

Reference your Cummins Owners Manual and Vehicle Owners Manual for complete operating instructions.

Fuel, Oil And DEF.

- Use only Ultra-Low Sulfur Diesel (ULSD) fuel.
- CJ-4 (low-ash) is the recommended oil.
- Be sure to check the DEF gauge at every refueling. Cummins recommends topping off the DEF tank when refueling. DEF meeting ISO 22241-1 must be used.
- Please read your vehicle manufacturer's Owners Manual to familiarize yourself with the location and capacity of the DEF tank.
- Put only DEF in the DEF tank, which has a blue cap.



Cummins Care.

Our authorized service technicians are fully trained to promptly handle any type of service issue. Call Cummins Care at 1-800-DIESELS™ (1-800-343-7357), and you'll get 24/7/365 assistance from a Cummins Care representative. If you need service, your Cummins Care representative will locate the nearest available and authorized facility.

Items Driver Will Notice.

- Under certain conditions (cold or very dry), condensation in the form of water vapor can be seen coming from the vehicle tailpipe. This is normal. It will clear within a few minutes of normal vehicle operation.
- If the engine is left at idle for significant periods of time without reaching the minimum exhaust operating temperatures, the engine will automatically increase the engine idle speed for several minutes to maintain the condition of the particulate filter. This can be interrupted by pressing either the service brake or the clutch.
- After prolonged idle, you may notice momentary white vapor and an odor. This is normal.
- When the HEST Lamp is illuminated, you may notice an odor. This is normal. If the odor is excessive and you also notice white vapor, have the exhaust system inspected for leaks.

Tips For Efficient Driving.

- 1. Lower drive speeds** – At interstate speeds, each 1.0 mph (1.6 kph) increase equals a 0.1 mpg (0.04 km/L) decrease. For example, driving at 65 mph instead of 70 mph can save 0.5 mpg (0.21 km/L) and create roughly a 7 percent improvement in fuel economy.
- 2. Run in top gear more than 90 percent of the time** – Every 10 percent drop in time in top gear equals approximately a 3 percent to 5 percent decrease in fuel economy.
- 3. Decrease idle rpm and idling time** – Using the lowest idle speed possible helps reduce fuel use by up to 0.5 gal/hr (1.89 L/hr). Every hour of idle time that you eliminate can increase your vehicle's fuel economy by as much as 1 percent.
- 4. Follow proper driving habits** – Sudden braking, rapid acceleration, early downshifting and other poor driving habits can negatively impact fuel economy by as much as 30 percent.

Additional information is available in our "10 Tips to Maximize Fuel Economy" brochure, Bulletin 4971341, which can be downloaded at cumminsengines.com. Or ask your local Cummins distributor or dealer for a copy.



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