



**RAM**

2013

OWNER'S MANUAL

Ram Truck

Diesel Supplement

## **VEHICLES SOLD IN CANADA**

With respect to any Vehicles Sold in Canada, the name Chrysler Group LLC shall be deemed to be deleted and the name Chrysler Canada Inc. used in substitution therefore.

## **DRIVING AND ALCOHOL**

Drunken driving is one of the most frequent causes of accidents.

Your driving ability can be seriously impaired with blood alcohol levels far below the legal minimum. If you are drinking, don't drive. Ride with a designated non-drinking driver, call a cab, a friend, or use public transportation.

### **WARNING!**

Driving after drinking can lead to an accident. Your perceptions are less sharp, your reflexes are slower, and your judgment is impaired when you have been drinking. Never drink and then drive.

This manual illustrates and describes the operation of features and equipment that are either standard or optional on this vehicle. This manual may also include a description of features and equipment that are no longer available or were not ordered on this vehicle. Please disregard any features and equipment described in this manual that are not on this vehicle.

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# INTRODUCTION

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### A MESSAGE FROM FCA US LLC

FCA US LLC and Cummins® welcome you as a Cummins® turbocharged diesel-powered truck owner. Your diesel truck will sound, feel, drive, and operate differently from a gasoline-powered truck. It is important that you read and understand this manual.

Almost 100% of the heavy duty trucks in the United States and Canada are diesel-powered because of the fuel economy, rugged durability, and high torque which permits pulling heavy loads. Cummins® engines power well over half of these trucks. Now this same technology and proven performance is yours in your truck equipped with the Cummins® turbocharged diesel engine.

You may find that some of the starting, operating, and maintenance procedures are different. However, they are simple to follow and careful adherence to them will ensure that you take full advantage of the features of this engine.

### NOTE:

- Some aftermarket products may cause severe engine/transmission and/or exhaust system damage. Your vehicle's Powertrain Control Systems can detect and store information about vehicle modifications that increase horsepower and torque output such as whether or not performance-enhancing powertrain components, commonly referred to as downloaders, power boxes, or performance chips have been used.
- Any chassis/suspension or tire size modifications to the vehicle will effect the performance of the Adaptive Cruise Control and Forward Collision Warning System.

This information cannot be erased and will stay in the system's memory even if the modification is removed. This information can be retrieved by FCA US LLC, and service and repair facilities, when servicing your vehicle.

This information may be used to determine if repair will be covered by the New Vehicle Limited Warranty.

There is a probability that the use of a “performance chip” will prohibit the engine from starting. In this instance, the vehicle will need to be serviced by a authorized dealer in order to return the vehicle to it’s factory settings.





# THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

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### REMOTE STARTING SYSTEM — IF EQUIPPED



This system uses the Remote Keyless Entry (RKE) transmitter to start the engine conveniently from outside the vehicle while still maintaining security. The system has a range of approximately 300 ft (91 m).

#### NOTE:

- The vehicle must be equipped with an automatic transmission to be equipped with Remote Start.
- The remote start system will wait for the “Wait To Start” telltale to extinguish before cranking the engine. This allows time for the intake heater to pre-heat the incoming air, and is normal operation in cold weather. Refer to “Electronic Vehicle Information Center/EVIC Warning Lights” in “Understanding Your Instrument Panel” for further information on and “Wait To Start” telltale and pre-heat cycle.

### How To Use Remote Start

All of the following conditions must be met before the engine will remote start:

- Shift lever in PARK
- Doors closed
- Hood closed
- HAZARD switch off
- BRAKE switch inactive (brake pedal not pressed)
- Ignition key removed from ignition switch
- Battery at an acceptable charge level
- RKE PANIC button not pressed
- Fuel meets minimum requirement
- Water In Fuel Indicator Light is not illuminated
- Wait To Start Light is not illuminated

**WARNING!**

- Do not start or run an engine in a closed garage or confined area. Exhaust gas contains Carbon Monoxide (CO) which is odorless and colorless. Carbon Monoxide is poisonous and can cause serious injury or death when inhaled.
- Keep Remote Keyless Entry (RKE) transmitters away from children. Operation of the Remote Start System, windows, door locks or other controls could cause serious injury or death.

**Remote Start Abort Message On Electronic Vehicle Information Center (EVIC) – If Equipped**

The following messages will display in the EVIC if the vehicle fails to remote start or exits remote start prematurely:

- Remote Start Aborted - Door Ajar

- Remote Start Aborted - Hood Ajar
- Remote Start Aborted - Fuel Low
- Remote Start Aborted - System Fault

The EVIC message stays active until the ignition is turned to the ON/RUN position.

**To Enter Remote Start Mode**

Press and release the REMOTE START button on the RKE transmitter twice, within five seconds. The parking lights will flash and the horn will chirp twice (if programmed). In cold ambient temperature conditions, the diesel vehicle may delay crank up to 30 seconds for the fuel and grid heater. Once the vehicle has started, the engine will run for 15 minutes.

**NOTE:**

- The park lamps will turn on and remain on during Remote Start mode.
- For security, power window and power sunroof operation (if equipped) are disabled when the vehicle is in the Remote Start mode.
- The engine can be started two consecutive times (two 15-minute cycles) with the RKE transmitter. However, the ignition switch must be cycled to the ON position before you can repeat the start sequence for a third cycle.

**To Exit Remote Start Mode Without Driving The Vehicle**

Press and release the REMOTE START button one time or allow the engine to run for the entire 15-minute cycle.

**NOTE:** To avoid unintentional shut downs, the system will disable the one time press of the REMOTE START button for two seconds after receiving a valid Remote Start request.

**To Exit Remote Start Mode And Drive The Vehicle**

To exit Remote start Mode and Drive the vehicle Before the end of the 15-minute cycle, press and release the unlock button on the RKE transmitter to unlock the door and disarm the Vehicle Security Alarm System (if equipped). Then prior to the end of the 15 minute cycle, insert the Key Fob (if equipped) and rotate to RUN.

**NOTE:**

- The ignition switch must be in the ON/RUN position in order to drive the vehicle.
- For vehicles equipped with the Electronic Vehicle Information Center (EVIC), the message "Insert Key/ Turn To On" will flash in the EVIC until you insert the Key Fob into the ignition switch. Once inserted, the message "Turn To On" will flash in the EVIC until you turn the ignition switch to the ON/RUN position.

## Remote Start Comfort Systems – If Equipped

When remote start is activated, the heated steering wheel, and driver heated seat features will automatically turn on in cold weather. In warm weather, the driver vented seat feature will automatically turn on when the remote start is activated. These features will stay on through the duration of remote start or until the ignition switch is turned to the ON position.

The Remote Start Comfort System can be activated and deactivated through the Electronic Vehicle Information Center (EVIC). For more information on Remote Start Comfort System operation refer to “Electronic Vehicle Information Center (EVIC)/Customer-Programmable Features (System Setup)” in “Understanding Your Instrument Panel”.

## ENGINE BREAK-IN RECOMMENDATIONS

The Cummins® turbocharged diesel engine does not require a break-in period due to its construction. Normal operation is allowed, providing the following recommendations are followed:

- Warm up the engine before placing it under load.
- Do not operate the engine at idle for prolonged periods.
- Use the appropriate transmission gear to prevent engine lugging.
- Observe vehicle oil pressure and temperature indicators.
- Check the coolant and oil levels frequently.
- Vary throttle position at highway speeds when carrying or towing significant weight.

## 12 THINGS TO KNOW BEFORE STARTING YOUR VEHICLE

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**NOTE:** Light duty operation such as light trailer towing or no load operation will extend the time before the engine is at full efficiency. Reduced fuel economy and power may be seen at this time.

For additional vehicle break-in requirements, refer to “Trailer Towing” in “Starting and Operating” of the Owners Manual.

Because of the construction of the Cummins® turbo-charged diesel engine, engine run-in is enhanced by loaded operating conditions which allow the engine parts to achieve final finish and fit during the first 6,000 miles (10 000 km).

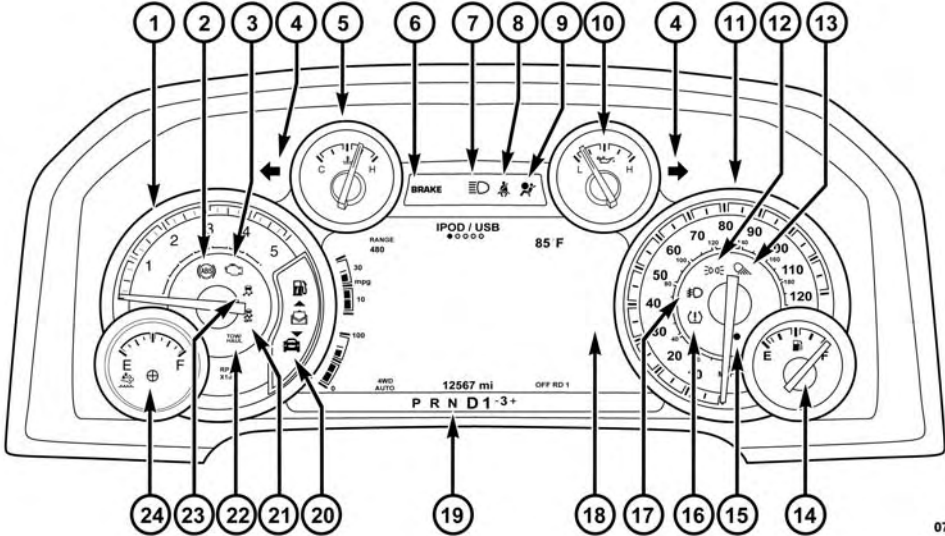
# UNDERSTANDING YOUR INSTRUMENT PANEL

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# INSTRUMENT CLUSTER





## INSTRUMENT CLUSTER DESCRIPTIONS

### 1. Tachometer

The tachometer indicates engine speed in Revolutions Per Minute (RPM x 1000).

#### CAUTION!

Do not operate the engine with the tachometer pointer at high RPM for extended periods. Engine operation over 3200 RPM (Redline) can result in significant damage that will not be covered under warranty.

### 2. Anti-Lock Brake (ABS) Light



This light monitors the Anti-lock Brake System (ABS). The light will turn on when the ignition switch is turned to the ON/RUN position and may stay on for as long as four seconds.

If the ABS light remains on or turns on while driving, it indicates that the anti-lock portion of the brake system is not functioning and that service is required. However, the conventional brake system will continue to operate normally if the BRAKE warning light is not on.

If the ABS light is on, the brake system should be serviced as soon as possible to restore the benefits of anti-lock brakes. If the ABS light does not turn on when the ignition switch is turned to the ON/RUN position, have the light inspected by an authorized dealer.

### 3. Malfunction Indicator Light (MIL)



The Malfunction Indicator Light (MIL) is part of an onboard diagnostic (OBDII) system which monitors the emissions and engine control system. If the vehicle is ready for emissions testing, the light will come on when the ignition is first turned on and remain on, as a bulb check, until the engine is started. If the vehicle is not ready for emissions

testing the light will come on when the ignition is first turned on and remain on for 15 seconds, then blink for 5 seconds, and remain on until the vehicle is started. If the bulb does not come on during starting, have the condition investigated promptly.

If this light comes on and remains on while driving, it suggests a potential engine control problem and the need for system service.

Although your vehicle will usually be drivable and not need towing, see your authorized dealer for service as soon as possible.

**CAUTION!**

Prolonged driving with the Malfunction Indicator Light (MIL) on could cause damage to the engine

*(Continued)*

**CAUTION! (Continued)**

control system. It also could affect fuel economy and drivability. If the MIL is flashing, severe catalytic converter damage and power loss will soon occur. Immediate service is required.

**WARNING!**

A malfunctioning catalytic converter, as referenced above, can reach higher temperatures than in normal operating conditions. This can cause a fire if you drive slowly or park over flammable substances such as dry plants, wood, cardboard, etc. This could result in death or serious injury to the driver, occupants or others.

#### 4. Turn Signal Indicators



The arrow will flash with the exterior turn signal when the turn signal lever is operated.

#### NOTE:

- A continuous chime will sound if the vehicle is driven more than 1 mile (1.6 km) with either turn signal on.
- Check for an inoperative outside light bulb if either indicator remains on and does not flash, or flashes at a rapid rate.

#### 5. Engine Coolant Temperature

This gauge shows the engine coolant temperature. The gauge pointer will likely show higher temperatures when driving in hot weather, up mountain grades, or in heavy stop and go traffic. If the red Warning Light turns on

while driving, safely bring the vehicle to a stop, and turn off the engine. DO NOT operate the vehicle until the cause is corrected.

#### CAUTION!

Driving with a hot engine cooling system could damage your vehicle. If the temperature gauge reads "H" pull over and stop the vehicle. Idle the vehicle with the air conditioner turned off until the pointer drops back into the normal range. If the pointer remains on the "H" and you hear continuous chimes, turn the engine off immediately and call an authorized dealer for service.

**WARNING!**

A hot engine cooling system is dangerous. You or others could be badly burned by steam or boiling coolant. You may want to call an authorized dealer for service if your vehicle overheats. If you decide to look under the hood yourself, see "Maintaining Your Vehicle." Follow the warnings under the "Cooling System Pressure Cap" paragraph.

### 6. Brake Warning Light

**BRAKE**

This light monitors various brake functions, including brake fluid level and parking brake application. If the brake light turns on it may indicate that the parking brake is applied, that the brake fluid level is low, or that there is a problem with the Anti-lock Brake System reservoir.

If the light remains on when the parking brake has been disengaged, and the fluid level is at the full mark on the master cylinder reservoir, it indicates a possible brake hydraulic system malfunction or that a problem with the Brake Booster has been detected by the Anti-Lock Brake System (ABS) / Electronic Stability Control (ESC) system. In this case, the light will remain on until the condition has been corrected. If the problem is related to the brake booster, the ABS pump will run when applying the brake and a brake pedal pulsation may be felt during each stop.

The dual brake system provides a reserve braking capacity in the event of a failure to a portion of the hydraulic system. A leak in either half of the dual brake system is indicated by the Brake Warning Light, which will turn on when the brake fluid level in the master cylinder has dropped below a specified level.

The light will remain on until the cause is corrected.

**NOTE:** The light may flash momentarily during sharp cornering maneuvers, which change fluid level conditions. The vehicle should have service performed, and the brake fluid level checked.

If brake failure is indicated, immediate repair is necessary.

### **WARNING!**

**Driving a vehicle with the red brake light on is dangerous. Part of the brake system may have failed. It will take longer to stop the vehicle. You could have a collision. Have the vehicle checked immediately.**

Vehicles equipped with the ABS, are also equipped with Electronic Brake Force Distribution (EBD). In the event of an EBD failure, the Brake Warning Light will turn on along with the ABS Light. Immediate repair to the ABS system is required.

Operation of the Brake Warning Light can be checked by turning the ignition switch from the OFF position to the ON/RUN position. The light should illuminate for approximately two seconds. The light should then turn off unless the parking brake is applied or a brake fault is detected. If the light does not illuminate, have the light inspected by an authorized dealer.

The light also will turn on when the parking brake is applied with the ignition switch in the ON/RUN position.

**NOTE:** This light shows only that the parking brake is applied. It does not show the degree of brake application.

### **7. High Beam Indicator**



This indicator shows that headlights are on high beam. Push the multifunction lever forward to switch the headlights to high beam, and pull toward yourself (normal position) to return to low beam.

### 8. *Seat Belt Reminder Light*



When the ignition switch is first turned to ON/RUN, this light will turn on for four to eight seconds as a bulb check. During the bulb check, if the driver's seat belt is unbuckled, a chime will sound. After the bulb check or when driving, if the driver's seat belt remains unbuckled, the seat belt reminder light will flash or remain on continuously. Refer to "Occupant Restraints" in "Things To Know Before Starting Your Vehicle" for further information.

### 9. *Air Bag Warning Light*



This light will turn on for four to eight seconds as a bulb check when the ignition switch is first turned to ON/RUN. If the light is either not on during starting, stays on, or turns on while driving, have the system inspected at an authorized

dealer as soon as possible. Refer to "Occupant Restraints" in "Things To Know Before Starting Your Vehicle" for further information.

### 10. *Engine Oil Pressure*

The pointer should always indicate some oil pressure when the engine is running. A continuous high or low reading under normal driving conditions may indicate a lubrication system malfunction. Immediate service should be obtained from an authorized dealer.

If the gauge pointer moves to either extreme of the gauge, the Check Gauges indicator will illuminate and a single chime will sound.

### 11. *Speedometer*

The speedometer shows the vehicle speed in miles per hour and/or kilometers per hour (mph/km/h).

### 12. Park/Headlight ON Indicator — If Equipped



This indicator will illuminate when the park lights or headlights are turned on.

### 13. Cargo Light



The cargo light will illuminate when the cargo light is activated by pressing the cargo light button on the headlight switch.

### 14. Fuel Gauge

Shows level of fuel in tank when ignition switch is in the ON/RUN position.

### 15. Vehicle Security Light — If Equipped



This light will flash at a fast rate for approximately 15 seconds, when the vehicle security alarm is arming, and then will flash slowly until the vehicle is disarmed.

### 16. Tire Pressure Monitoring Telltale Light



Each tire, including the spare (if provided), should be checked monthly when cold and inflated to the inflation pressure recommended by the vehicle manufacturer on the vehicle placard or tire inflation pressure label. (If your vehicle has tires of a different size than the size indicated on the vehicle placard or tire inflation pressure label, you should determine the proper tire inflation pressure for those tires.)

As an added safety feature, your vehicle has been equipped with a Tire Pressure Monitoring System (TPMS) that illuminates a low tire pressure telltale when one or more of your tires is significantly under-inflated. Accordingly, when the low tire pressure telltale illuminates, you should stop and check your tires as soon as possible, and inflate them to the proper pressure. Driving on a significantly under-inflated tire causes the tire to overheat and can lead to tire failure. Under-inflation also

reduces fuel efficiency and tire tread life, and may affect the vehicle's handling and stopping ability.

Please note that the TPMS is not a substitute for proper tire maintenance, and it is the driver's responsibility to maintain correct tire pressure, even if under-inflation has not reached the level to trigger illumination of the TPMS low tire pressure telltale.

Your vehicle has also been equipped with a TPMS malfunction indicator to indicate when the system is not operating properly. The TPMS malfunction indicator is combined with the low tire pressure telltale. When the system detects a malfunction, the telltale will flash for approximately one minute and then remain continuously illuminated. This sequence will continue upon subsequent vehicle start-ups as long as the malfunction exists. When the malfunction indicator is illuminated, the system may not be able to detect or signal low tire pressure as intended. TPMS malfunctions may occur for a variety of reasons, including the installation of replacement or

alternate tires or wheels on the vehicle that prevent the TPMS from functioning properly. Always check the TPMS malfunction telltale after replacing one or more tires or wheels on your vehicle, to ensure that the replacement or alternate tires and wheels allow the TPMS to continue to function properly.

### **CAUTION!**

**The TPMS has been optimized for the original equipment tires and wheels. TPMS pressures and warning have been established for the tire size equipped on your vehicle. Undesirable system operation or sensor damage may result when using replacement equipment that is not of the same size, type, and/or style. Aftermarket wheels can cause sensor damage. Do not use tire sealant from a can or balance beads if your vehicle is equipped with a TPMS, as damage to the sensors may result.**



**NOTE:** The TPMS telltale is also accompanied by a “Low Tire” message in the odometer (Base Cluster), or in the Electronic Vehicle Information Center (EVIC) screen indicating “Low Tire” for EVIC enabled clusters.

### 17. Front Fog Light Indicator — If Equipped



This indicator will illuminate when the front fog lights are on.

### 18. Electronic Vehicle Information Center (EVIC)

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster. For further information, refer to “Electronic Vehicle Information Center (EVIC)”.

### 19. Transmission Gear Position Indicator

The Transmission Gear Position Indicator is self-contained within the instrument cluster. It displays the gear range of the automatic transmission.

**NOTE:** The highest available transmission gear is displayed in the lower right corner of the Electronic Vehicle Information Center (EVIC) whenever the Electronic Range Select (ERS) feature is active. Use the +/- selector on the shift lever to activate ERS. Refer to “Automatic Transmission” in “Starting And Operating” for further information.

### 20. Electronic Vehicle Information Center (EVIC) Menu

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster. For further information, refer to “Electronic Vehicle Information Center (EVIC)”.

### 21. Electronic Stability Control (ESC) OFF Indicator Light — If Equipped



This light indicates that the Electronic Stability Control (ESC) is in Partial Off or Full Off mode.

## 22. TOW/HAUL

The icon shows the text "TOW/HAUL" in a bold, sans-serif font, with "TOW/" on the top line and "HAUL" on the bottom line, all contained within a rectangular border.

The TOW HAUL button is located on the center stack upper switch bank. This light will illuminate when TOW HAUL mode is selected.

## 23. Electronic Stability Control (ESC) Activation/Malfunction Indicator Light — If Equipped



The “ESC Activation/Malfunction Indicator Light” in the instrument cluster will come on when the ignition switch is turned to the ON/RUN position. It should go out with the engine running. If the “ESC Activation/Malfunction Indicator Light” comes on continuously with the engine running, a malfunction has been detected in the ESC system. If this light remains on after several ignition cycles, and the vehicle has been driven several miles (kilometers) at speeds greater than 30 mph (48 km/h), see your authorized dealer as soon as possible to have the problem diagnosed and corrected.

## NOTE:

- The “ESC Off Indicator Light” and the “ESC Activation/Malfunction Indicator Light” come on momentarily each time the ignition switch is turned to ON/RUN.
- Each time the ignition is turned to ON/RUN, the ESC system will be ON, even if it was turned off previously.
- The ESC system will make buzzing or clicking sounds when it is active. This is normal; the sounds will stop when ESC becomes inactive following the maneuver that caused the ESC activation.

## 24. DEF Gauge

The DEF Gauge displays the actual level of Diesel Exhaust Fluid in the DEF tank. Diesel Exhaust Fluid (DEF) is required to maintain normal vehicle operation and emissions compliance. More information is available in the Electronic Vehicle Information (EVIC) section under the heading of Diesel Exhaust Fluid (DEF) Warning Messages.

## ELECTRONIC VEHICLE INFORMATION CENTER (EVIC)

The Electronic Vehicle Information Center (EVIC) features a driver-interactive display that is located in the instrument cluster.



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### Electronic Vehicle Information Center (EVIC)

This system conveniently allows the driver to select a variety of useful information by pressing the switches mounted on the steering wheel.

Refer to “Electronic Vehicle Information Center – If Equipped” in the Owner’s Manual for further information.

## Electronic Vehicle Information Center (EVIC) Displays

When the appropriate conditions exist, the Electronic Vehicle Information Center (EVIC) Displays the following messages:

- System Setup Unavailable – Vehicle Not in Park
- System Setup Unavailable – Vehicle in Motion
- Service Air Filter
- Perform Service
- Exhaust Filter XX% Full Safely Drive at Highway Speeds To Remedy
- Exhaust Filter Full – Power Reduced See Dealer
- Exhaust Service Required – See Dealer Now
- Exhaust System – Filter XX% Full Service Required See Dealer
- Exhaust System – Regeneration In Process Exhaust Filter XX% Full
- Exhaust System – Regeneration Completed
- DEF Low Refill Soon
- Speed Limited to 5 MPH in XXX mi Refill DEF
- 5 MPH Max Speed on Restart, Long Idle or Refuel Refill DEF
- 5 MPH Max Speed Refill DEF
- Service DEF System See Dealer
- 5 MPH Max Speed in XXX mi Service DEF System See Dealer
- 5 MPH Max Speed on Restart, Long Idle or Refuel Service DEF See Dealer
- 5 MPH Max Speed Service DEF System See Dealer

- Coolant Low
- Engine Power Reduced During Warmup
- Engine Power Reduced up to 30-sec During Warmup
- Engine Power Reduced up to 2-min During Warmup
- Active Airbox Service Required See Dealer

### EVIC Warning Lights

#### Water In Fuel Indicator Light



The “Water In Fuel Indicator Light” will illuminate when there is water detected in the fuel filters. If this light remains on, DO NOT start the vehicle before you drain the water from the fuel filters to prevent engine damage. Refer to “Maintenance Procedures/ Draining Fuel/Water Separator Filters” in “Maintaining Your Vehicle” for further information.

#### Wait To Start Light



The “Wait To Start Light” will illuminate when the ignition is turned to the RUN position and the intake manifold temperature is below 66°F (19°C). Wait until the “Wait To Start Light” turns OFF, then start the vehicle. Refer to “Starting Procedures” in “Starting and Operating” for further information.

**NOTE:** The “Wait To Start Light” may not illuminate if the intake manifold temperature is warm enough.

#### Low Coolant Level Indicator



This telltale will turn on to indicate the vehicle coolant level is low.

### Cold Ambient Derate Mode Messages

The vehicle will display messages when a derate (engine power reduction) is activated to protect the turbocharger during engine start up in cold ambient temperatures.

- **Engine Power Reduced During Warmup** - This message will display during start up when the ambient temperature is between 10° F (-12° C) and -10° F (-23° C).
- **Engine Power Reduced Up To 30 Sec (Seconds) During Warmup** - This message will display during start up when the ambient temperature is between -10° F (-23° C) and -25 F (-32° C).
- **Engine Power Reduced Up To 2 Min (Minutes) During Warmup** - This message will display during start up when the ambient temperature is -25° F (-32° C) and below.

- **Coolant Low** - This telltale will turn on to indicate the vehicle coolant level is low. See “Adding Coolant” under the section “Maintaining Your Vehicle” for more information.

### Diesel Exhaust Fluid (DEF) Warning Messages

Your vehicle will begin displaying warning messages when the DEF level reaches a driving range of approximately 350 miles (563 km). If the following warning message sequence is ignored, your vehicle may be limited to a maximum speed of 5 MPH (8 km/H) unless DEF is added.

- **DEF Low Refill Soon** – This message will display when the low level is reached, during vehicle start up, and with increased frequency during vehicle operation. It will be accompanied by a single chime. Approximately 5 gallons (19 Liters) of DEF is required to refill the tank when this message is initially displayed. on pickup applications, and approximately 7 gallons (28 Liters) are required on chassis-cab applications.

- **Speed Limited to 5 MPH in XXX mi Refill DEF** – This message will continuously display if the “DEF Low Refill Soon” message is ignored, and the frequency of occurrence of the chime will increase unless up to 2 gallons (7.5 Liters) of DEF is added to the tank.
- **5 MPH Max Speed on Restart, Long Idle or Refuel Refill DEF** – This message will continuously display when the counter reaches zero, and will be accompanied by a periodic chime.
- The vehicle will only be capable of a maximum speed of 5 MPH upon the first of the following conditions to occur:
  - If the vehicle is shutoff and restarted.
  - If the vehicle is idled for an extended period of time, approximately one hour or greater.
  - If the system detects that the level of fuel in the tank has increased.
- Add a minimum of 2 gallons (9.5 Liters) of DEF to the tank in order to avoid vehicle operation at a maximum speed of 5 MPH (8 km/H).
- **5 MPH Max Speed Refill DEF** – The vehicle will only be capable of a maximum speed of 5 MPH (8 km/H) when this message is displayed. Add up to 2.5 gallons (9.5 Liters) of DEF to the tank to restore normal vehicle operation.

**NOTE:** A minimum of 2 gallons (9.5 Liters) may be required to restore normal vehicle operation. Although the vehicle will start normally and can be placed in gear after this message has been initially displayed, extreme caution should be utilized since the vehicle will only be capable of maneuvering at a maximum speed of 5 MPH (8 km/H).

## Diesel Exhaust Fluid (DEF) Fault Warning Messages

There are four different messages which are displayed if the vehicle detects that the DEF system has been filled with a fluid other than DEF, has experienced component failures, or when tampering has been detected. The vehicle may be limited to a maximum speed of 5 MPH (8 km/H) if the DEF system is not serviced within less than 250 miles (402 km) of the fault being detected.

When the DEF system needs to be serviced the following warnings will display:

- **Service DEF System – See Dealer** — This message will display when the fault is initially detected, each time the vehicle is started, and periodically during driving. The message will be accompanied by a single chime. We recommend you drive to your nearest authorized dealer and have your vehicle serviced as soon as possible.

- **5 MPH Max Speed in 200 mi Service DEF System See Dealer** — This message will display if the DEF system has not been serviced after the “Service DEF System – See Dealer” message is displayed. This message will continuously display until the mileage counter reaches zero, and will be accompanied by a periodic chime. The message will continue to countdown until it reaches zero unless the vehicle is serviced. We recommend you drive to your nearest authorized dealer and have your vehicle serviced immediately.

**NOTE:** Under some circumstances this mileage counter may start with a value of less than 200 miles (322 km). For example, if recurring faults are detected in a time interval of less than 40 hours, the counter may restart at the value where it stopped when a previous fault was temporarily remedied, or at a minimum of 50 miles (80 km).



- **5 MPH Max Speed on Restart, Long Idle or Refuel Service DEF See Dealer** — This message will continuously display when the mileage counter reaches zero, and will be accompanied by a periodic chime.
- The vehicle will only be capable of a maximum speed of 5 MPH upon the first of the following conditions to occur:
  - If the vehicle is shutoff and restarted.
  - If the vehicle is idled for an extended period of time, approximately one hour or greater.
  - If the system detects that the level of fuel in the tank has increased.
- **5 MPH Max Speed Service DEF System See Dealer** — This message will continuously display, and will be accompanied by a periodic chime. Although the vehicle can be started and placed in gear, the vehicle will

only operate at a maximum speed of 5 MPH. Your vehicle will require towing, see your authorized dealer for service.

**NOTE:** When this message is displayed, the engine can still be started. However, the vehicle will only operate at a maximum speed of 5 MPH.

### **RAM Active Air System**

Your vehicle is equipped with an advanced Ram Active Air system that provides enhanced performance, especially when towing under demanding hot or high altitude conditions. If the EVIC displays the message “Active Airbox Service Required See Dealer”, vehicle performance may be reduced until service is performed by an authorized RAM dealer.

## Vehicle Information (Customer Information Features)

Press and release the UP or DOWN button until “Vehicle Info” displays in the EVIC and press the SELECT button. Press the UP and DOWN button to scroll through the available information displays, then press SELECT to display any one of the following choices.

- *Battery Voltage*

Displays the actual battery voltage.

**NOTE:** The battery voltage may show a fluctuation at various engine temperatures. This cycling operation is caused by the post-heat cycle of the intake manifold heater system. The number of cycles and the length of the cycling operation is controlled by the engine control module. Post-heat operation can run for several minutes, and then the electrical system and voltmeter needle will stabilize.

- *Coolant Temp*

Displays the actual coolant temperature.

- *Oil Pressure*

Displays the actual oil pressure.

- *Trans Temperature*

Displays the actual automatic transmission sump temperature.

- *Engine Hours*

Displays the total hours of engine operation, and the hours in drive and at idle.

- *Oil Filter Life*

Displays the percentage of oil filter life remaining, and the miles since the last reset.

- *Fuel Filter Life*

Displays the percentage of fuel filter life remaining, and the miles since the last reset.

- *Exhaust Brake*

Displays actual exhaust brake power.

- *Turbo Boost*

Displays actual turbo boost value.

- *Tire Pressure Monitor System*

Displays the actual tire pressure



# STARTING AND OPERATING

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**STARTING PROCEDURES**

Before starting your vehicle, adjust your seat, adjust both inside and outside mirrors, and fasten your seat belts.

The starter should not be operated for more than 15-second intervals. Waiting a few minutes between such intervals will protect the starter from overheating.

**WARNING!**

- **Do not leave children or animals inside parked vehicles in hot weather. Interior heat build up may cause serious injury or death.**
- **When leaving the vehicle, always remove the key fob and lock your vehicle.**
- **Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a**

*(Continued)*

**WARNING! (Continued)**

**number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), A child could operate power windows, other controls, or move the vehicle.**

**Manual Transmission – If Equipped**

Apply the parking brake, place the shift lever in NEUTRAL and press the clutch pedal to the floor before starting the vehicle. This vehicle is equipped with a clutch interlocking ignition system. It will not start unless the clutch is fully pressed.



## Automatic Transmission – If Equipped

Start the engine with the transmission in the NEUTRAL or PARK position. Apply the brake before shifting to any driving range.

### Tip Start Feature

**Do not** press the accelerator. Turn the ignition switch briefly to the START position and release it. The starter motor will continue to run but will automatically disengage when the engine is running.

### Keyless Enter-N-Go™



This feature allows the driver to operate the ignition switch with the push of a button, as long as the Remote Start/Keyless Enter-N-Go™ Key Fob is in the passenger compartment.

## Normal Starting

### *Using The ENGINE START/STOP Button*

1. The transmission must be in PARK or NEUTRAL.
2. Press and hold the brake pedal while pressing the ENGINE START/STOP button once.
3. The system takes over and attempts to start the vehicle. If the vehicle fails to start, the starter will disengage automatically after 10 seconds.
4. If you wish to stop the cranking of the engine prior to the engine starting, remove your foot from the brake pedal and press the button again.

**NOTE:** Normal starting of either a cold or a warm engine is obtained without pumping or pressing the accelerator pedal.

**NOTE:** Under cold weather conditions, the engine may not immediately crank if the "Wait To Start" telltale is illuminated. This is normal operation. For vehicles equipped with the optional remote start package the vehicle will automatically crank when the "Wait To Start" time has elapsed. See the section "Starting Procedure Engine Manifold Air Temperature 0°F to 66°F (18° C to 19°C)" for more information.

#### *To Turn Off The Engine Using ENGINE START/STOP Button*

1. Place the shift lever/shift selector in PARK, then press and release the ENGINE START/STOP button.
2. The ignition switch will return to the OFF position.
3. If the shift lever/shift selector is not in PARK, the ENGINE START/STOP button must be held for two seconds and vehicle speed must be above 5 mph (8 km/h) before the engine will shut off. The ignition

switch position will remain in the ACC position until the shift lever/shift selector is in PARK and the button is pressed twice to the OFF position. If the shift lever/shift selector is not in PARK and the ENGINE START/STOP button is pressed once, the EVIC (if equipped) will display a "Vehicle Not In Park" message and the engine will remain running. Never leave a vehicle out of the PARK position, or it could roll.

**NOTE:** If the ignition switch is left in the ACC or RUN (engine not running) position and the transmission is in PARK, the system will automatically time out after 30 minutes of inactivity and the ignition will switch to the OFF position.

### ***ENGINE START/STOP Button Functions – With Driver's Foot OFF The Brake Pedal (In PARK Or NEUTRAL Position)***

The ENGINE START/STOP button operates similar to an ignition switch. It has four positions, OFF, ACC, RUN and START. To change the ignition switch positions without starting the vehicle and use the accessories follow these steps.

1. Starting with the ignition switch in the OFF position:
2. Press the ENGINE START/STOP button once to change the ignition switch to the ACC position (EVIC displays "ACC"),
3. Press the ENGINE START/STOP button a second time to change the ignition switch to the RUN position (EVIC displays "RUN"),

4. Press the ENGINE START/STOP button a third time to return the ignition switch to the OFF position (EVIC displays "OFF").

### **Keyless Enter-N-Go™ Starting Procedure – Engine Manifold Air Temperature 0° F To 66° F (-18° C to 19° C)**

**NOTE:** The temperature displayed in the Electronic Vehicle Information Center (EVIC) does not necessarily reflect the engine manifold air temperature. Refer to "Electronic Vehicle Information Center (EVIC)" in "Understanding Your Instrument Panel" for further information. When engine temperatures fall below 66°F (19°C) the "Wait To Start Light" will remain on indicating the intake manifold heater system is active.

Follow the steps in the “Normal Starting” procedure except:

1. Pushing the engine start button with the driver’s foot on the brake will move the ignition from OFF or ACC to RUN, and will illuminate the “Wait To Start” telltale. The engine will not immediately crank, this is normal operation.
2. The “Wait To Start” telltale will remain on for a period of time that varies depending on the engine temperature.
3. While the “Wait to Start” telltale is on, the EVIC will additionally display a gauge or bar whose initial length represents the full “Wait to Start” time period. Its length will decrease until it disappears when the “Wait to Start” time has elapsed.

### CAUTION!

**If the “Water in Fuel Indicator Light” remains on, DO NOT START engine before you drain the water from the fuel filters to avoid engine damage. Refer to “Maintenance Procedures/Draining Fuel/Water Separator Filter” in “Maintaining Your Vehicle” for further information.**

4. After engine “Wait To Start” telltale goes off, the engine will automatically crank on vehicles equipped with the optional remote start package.

**CAUTION!**

The engine may automatically crank when the "Wait To Start" time has elapsed. To abort the automatic starting process, ensure the driver's foot is fully removed from the brake pedal prior to pushing the START/STOP button to cycle the ignition off.

5. After engine start-up, check to see that there is oil pressure.
6. Allow the engine to idle about three minutes until the manifold heaters have completed the post-heat cycle.
7. Release the parking brake and drive.

**NOTE:**

- Engine idle speed will automatically increase to 1,000 RPM and engage the Variable Geometry Turbocharger at low coolant temperatures to improve engine warm-up.

- If the engine stalls, or if the ignition switch is left ON for more than two minutes after the "Wait To Start Light" goes out, reset the grid heaters by turning the ignition switch to the OFF position for at least five seconds and then back ON. Repeat steps 1 through 7 of "Keyless Enter-N-Go Starting Procedure – Engine Manifold Air Temperature Below 66° F (19° C)."

**Extreme Cold Weather**

The Cummins® diesel engine is equipped with several features designed to assist cold weather starting and operation:

- The engine block heater is a resistance heater installed in the water jacket of the engine just above and behind the oil filter. It requires a 110–115 Volt AC electrical outlet with a grounded, three-wire extension cord.

**NOTE:** The engine block heater cord is a factory installed option. If your vehicle is not equipped, heater cords are available from your authorized MOPAR® dealer.

- A 12 Volt heater built into the fuel filter housings aid in preventing fuel gelling. It is controlled by a built-in thermostat.
- A heated intake air system both improves engine starting and reduces the amount of white smoke generated by a warming engine.

#### **Normal Starting Procedure – Engine Manifold Air Temperature Above 66° F (19° C)**

Observe the instrument panel cluster lights when starting the engine.

1. Always apply the parking brake.

2. Shift into PARK for an automatic transmission. For vehicles equipped with a manual transmission, fully press and hold the clutch pedal and shift into NEUTRAL.
3. Turn the ignition switch to the ON position and watch the instrument panel cluster lights.

#### **CAUTION!**

**If the “Water in Fuel Indicator Light” remains on, DO NOT START the engine before you drain the water from the fuel filters to avoid engine damage. Refer to “Maintenance Procedures/Draining Fuel/Water Separator Filter” in “Maintaining Your Vehicle” for further information.**

4. Turn the ignition switch to the START position and crank the engine. Do not press the accelerator during starting.

**CAUTION!**

Do not crank engine for more than 15 seconds at a time or starter motor damage may result. Turn the ignition switch to the OFF position and wait at least two minutes for the starter to cool before repeating start procedure.

5. When the engine starts, release the key fob.
6. Check that the oil pressure warning light has turned off.
7. Release the parking brake.

**Starting Procedure – Engine Manifold Air Temperature 0°F To 66°F (–18°C to 19°C)**

**NOTE:** The temperature displayed in the Electronic Vehicle Information Center (EVIC) does not necessarily reflect the engine manifold air temperature. Refer to “Electronic Vehicle Information Center (EVIC)” in “Understanding Your Instrument Panel” for further information. When engine temperatures fall below 66°F (19°C) the “Wait To Start Light” will remain on indicating the intake manifold heater system is active.

Follow the steps in the “Normal Starting” procedure except:

1. The “Wait To Start” telltale will remain on for a period of time that varies depending on the engine temperature.

2. While the "Wait To Start" telltale is on, the EVIC will additionally display a gauge or bar whose initial length represents the full "Wait To Start" time period. Its length will decrease until it disappears when the "Wait To Start" time has elapsed.

**CAUTION!**

If the "Water in Fuel Indicator Light" remains on, **DO NOT START engine before you drain the water from the fuel filters to avoid engine damage. Refer to "Maintenance Procedures/Draining Fuel/Water Separator Filter" in "Maintaining Your Vehicle" for further information.**

3. After the "Wait To Start" telltale goes off, turn the ignition switch to the START position. Do not press the accelerator during starting.

**CAUTION!**

**Do not crank engine for more than 15 seconds at a time or starter motor damage may result. Turn the ignition switch to the OFF position and wait at least two minutes for the starter to cool before repeating start procedure.**

4. After engine start-up, check that the oil pressure warning light has turned off.
5. Allow the engine to idle about three minutes until the manifold heaters have completed the post-heat cycle.
6. Release the parking brake and drive.

**NOTE:**

- Engine idle speed will automatically increase to 1,000 RPM and engage the Variable Geometry Turbocharger at low coolant temperatures to improve engine warm-up.



- Automatic equipped vehicles with optional Keyless Enter-N-Go™ – If the start button is pushed once while in park with the ignition off and driver's foot on the brake pedal, the vehicle will automatically crank and start after the Wait to Start time has elapsed. If it is desired to abort the start process before it completes, the driver's foot should be fully removed from the brake pedal prior to pushing the start button again in order for the ignition to move directly to off.
- If the engine stalls, or if the ignition switch is left ON for more than two minutes after the "Wait To Start" telltale goes out, reset the grid heaters by turning the ignition switch to the OFF position for at least five seconds and then back ON. Repeat steps 1 through 5 of "Starting Procedure – Engine Manifold Air Temperature Below 66°F (19°C)."

### **Starting Procedure – Engine Manifold Air Temperature Below 0°F (-18°C)**

In extremely cold weather below 0°F (-18°C) it may be beneficial to cycle the manifold heaters twice before attempting to start the engine. This can be accomplished by turning the ignition OFF for at least five seconds and then back ON after the "Wait To Start" telltale has turned off, but before the engine is started. However, excessive cycling of the manifold heaters will result in damage to the heater elements or reduced battery voltage.

**NOTE: If multiple pre-heat cycles are used before starting, additional engine run time may be required to maintain battery state of charge at a satisfactory level.**

1. If the engine stalls after the initial start, the ignition must be turned to the OFF position for at least five seconds and then to the ON position to recycle the manifold heaters.

**NOTE:** Excessive white smoke and poor engine performance will result if manifold heaters are not recycled.

- Heat generated by the manifold heaters dissipates rapidly in a cold engine. If more than two minutes pass between the time the “Wait To Start” telltale turns off and the engine is started, recycle the manifold heaters by turning the ignition switch to the OFF position for at least five seconds and then back ON.
- If the vehicle is driven and vehicle speed exceeds 19 mph (31 km/h) before the manifold heater post-heat (after start) cycle is complete, the manifold heaters will shut off.
- If the engine is started before the “Wait To Start” telltale turns off, the preheat cycle will turn off.

- If the engine is cranked for more than 10 seconds, the post-heat cycle will turn off.

**NOTE:**

- Engine idle speed will automatically increase to 1,000 RPM and engage the Variable Geometry Turbocharger at low coolant temperatures to improve engine warm-up.
- When a diesel engine is allowed to run out of fuel or the fuel gels at low temperatures, air is pulled into the fuel system. If your engine has run out of fuel, refer to “Maintenance Procedures/Priming If The Engine Has Run Out Of Fuel” in “Maintaining Your Vehicle” for further information.

## Starting Fluids

### WARNING!

Starting fluids or flammable liquids must never be used in the Cummins® diesel engine (see Warning label). Never pour diesel fuel, flammable liquid, starting fluids (ether) into the air cleaner canister, air intake piping, or turbocharger inlet in an attempt to start the vehicle. This could result in a flash fire and explosion causing serious personal injury and engine damage.

The engine is equipped with an automatic electric air preheating system. If the instructions in this manual are followed, the engine should start in all conditions.

### WARNING!

- Do not leave children or animals inside parked vehicles in hot weather. Interior heat build up may cause serious injury or death.
- When leaving the vehicle, always remove the key fob and lock your vehicle.
- Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), A child could operate power windows, other controls, or move the vehicle.

## NORMAL OPERATION – DIESEL ENGINE

Observe the following when the engine is operating.

- All message center lights are off.
- Malfunction Indicator Light (MIL) is off.
- Engine oil pressure is above 10 psi (69 kPa) at idle.
- Voltmeter operation:

The voltmeter may show a gauge fluctuation at various engine temperatures. This cycling operation is caused by the post-heat cycle of the intake manifold heater system. The number of cycles and the length of the cycling operation is controlled by the engine control module. Post-heat operation can run for several minutes, and then the electrical system and voltmeter needle will stabilize.

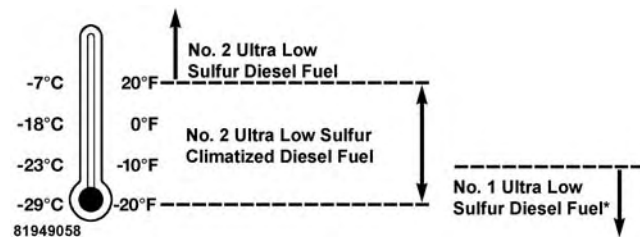
The cycling action will cause temporary dimming of the headlamps, interior lamps, and also a noticeable reduction in blower motor speed.

## Cold Weather Precautions

Operation in ambient temperature below 32°F (0°C) may require special considerations. The following charts suggest these options:

### Fuel Operating Range

**NOTE:** Use “Ultra Low Sulfur Diesel Fuels” **ONLY**.



\*No. 1 Ultra Low Sulfur Diesel Fuel should only be used where extended arctic conditions (-10°F/-23°C) exist.

**NOTE:**

- Use of Climatized Ultra Low Sulfur Diesel Fuel or Number 1 Ultra Low Sulfur Diesel Fuel results in a noticeable decrease in fuel economy.
- Climatized Ultra Low Sulfur Diesel Fuel is a blend of Number 2 Ultra Low Sulfur and Number 1 Ultra Low Sulfur Diesel Fuels which reduces the temperature at which wax crystals form in fuel.
- The fuel grade should be clearly marked on the pump at the fuel station
- The engine requires the use of **“Ultra Low Sulfur Diesel Fuel”**. Use of incorrect fuel could result in engine and exhaust system damage. Refer to “Fuel Requirements” in “Starting and Operating” for further information.

**Engine Oil Usage**

Refer to “Maintenance Procedures” in “Maintaining Your Vehicle” for the correct engine oil viscosity.

**Winter Front Usage**

A winter front or cold weather cover is to be used in ambient temperatures below  $-10^{\circ}\text{C}$ , especially during extended idle conditions to reduce condensation build-up within engine crankcase. If a winter front or cold weather cover is to be used, a percentage of the total grille opening area must be left uncovered to provide sufficient air flow to the charge air cooler and automatic transmission oil cooler. The percentage of opening must be increased with the increasing ambient air temperature and/or engine load. If the cooling fan can be heard cycling frequently, increase the size of the opening in the winter front. A suitable cold weather cover is available from your MOPAR® dealer.

### Battery Blanket Usage

A battery loses 60% of its cranking power as the battery temperature decreases to 0°F (-18°C). For the same decrease in temperature, the engine requires twice as much power to crank at the same RPM. The use of 120 VAC powered battery blankets will greatly increase starting capability at low temperatures. Suitable battery blankets are available from your authorized MOPAR® dealer.

### Engine Warm-Up

Avoid full throttle operation when the engine is cold. When starting a cold engine, bring the engine up to operating speed slowly to allow the oil pressure to stabilize as the engine warms up.

**NOTE:** High-speed, no-load running of a cold engine can result in excessive white smoke and poor engine performance. No-load engine speeds should be kept under 1,200 RPM during the warm-up period, especially in cold ambient temperature conditions.

Your vehicle is equipped with a turbo speed limiter, this feature limits the engine speed to 1,200 RPM when engine coolant temperatures are below 70°F (21°C). This feature is designed to protect the turbocharger from damage and will only operate in PARK or NEUTRAL.

If temperatures are below 32°F (0°C), operate the engine at moderate speeds for five minutes before full loads are applied.

### NOTE:

- If ambient temperatures are low and the coolant temperature is below 180°F (82°C), the engine idle speed will slowly increase to 1,000 RPM after two minutes of idle, if the following conditions are met:
  - foot is off brake pedal and throttle pedal
  - automatic transmission is in PARK
  - vehicle speed is zero
  - Applying the throttle will cancel fast idle

- Operating the exhaust brake at idle will greatly improve warm up rate and will help keep the engine close to operating temperature during extended idle.

### Engine Idling

Avoid prolonged idling, long periods of idling may be harmful to your engine because combustion chamber temperatures can drop so low that the fuel may not burn completely. Incomplete combustion allows carbon and varnish to form on piston rings, engine valves, and injector nozzles. Also, the unburned fuel can enter the crankcase, diluting the oil and causing rapid wear to the engine.

If the engine is allowed to idle, under some conditions the idle speed may increase to 900 RPM then return to normal idle speed. This is normal operation.

**NOTE:** For EVIC messages related to the vehicle's exhaust system, refer to "Maintenance Procedures/Intervention Regeneration Strategy – EVIC Message Process Flow" in "Maintaining Your Vehicle" for further information.

### Idle-Up Feature – Automatic Transmission Only

The driver-controlled high idle speed feature will help increase cylinder temperatures and provide additional cab heat, however, excessive idling may still cause the exhaust aftertreatment system to not properly regenerate. Extended periods of idle time should be avoided.

The Idle-Up feature uses the speed control switches to increase engine idle speed and quickly warm the vehicle's interior.

1. With the transmission in PARK, the parking brake applied, and the engine running, press the speed control switch to the ON position, then press the SET switch.
2. The engine RPM will go up to 1100 RPM. To increase the RPM, press and hold the ACCEL/RESUME switch and the idle speed will increase to approximately 1500 RPM. To decrease the RPM, press and hold the DECEL switch and the idle speed will decrease to approximately 1100 RPM.
3. To cancel the Idle-Up feature, either press the CANCEL switch, press the ON/OFF switch, or press the brake pedal.

### Stopping The Engine

Idle the engine a few minutes before routine shutdown. After full load operation, idle the engine three to five minutes before shutting it down. This idle period will

allow the lubricating oil and coolant to carry excess heat away from the combustion chamber, bearings, internal components, and turbocharger. This is especially important for turbocharged, charge air-cooled engines.

#### NOTE:

- During engine shut down on vehicles equipped with manual transmissions, it is normal for the diesel engine to resonate heavily for a moment during engine shut off. When the engine is connected to a manual transmission, this resonance causes load gear rattle from the transmission. This is commonly referred to as “shut down rattle.” The manufacturer recommends performing engine shut down with the clutch pedal pushed to the floor (clutch disengaged). When engine shut down is performed in this manner the rattle is reduced (not eliminated).



- Refer to the following chart for proper engine shutdown.

Driving Condition	Load	Turbo-charger Temperature	Idle Time (min.) Before Engine Shut-down
Stop and Go	Empty	Cool	Less than One
Stop and Go	Medium		One
Highway Speeds	Medium	Warm	Two
City Traffic	Maximum GCWR		Three
Highway Speeds	Maximum GCWR		Four

Driving Condition	Load	Turbo-charger Temperature	Idle Time (min.) Before Engine Shut-down
Uphill Grade	Maximum GCWR	Hot	Five

### Idle Shutdown

This feature can be enabled so that the truck will automatically shutdown when the truck has been idling for a set period of time when the engine is at operating temperature. Idle time can be set in 5 minute increments between 5 and 60 minutes. See your local authorized dealer to enable this feature.

### **Programmable Maximum Vehicle Speed (Chassis Cab Only)**

This feature allows the owner to set a maximum vehicle speed for the vehicle. The 3500 Series maximum vehicle speed can be set between 40 mph (64 km/h) and 87 mph (140 km/h). The 4500/5500 Series maximum vehicle speed can be set between 40 mph (64 km/h) and 85 mph (136 km/h). See your local authorized dealer to enable this feature.

**NOTE:** DO NOT set the maximum vehicle speed to a value greater than what the vehicle tires are rated for.

### **Operating Precautions**

#### **Avoid Overheating The Engine**

The temperature of the engine coolant (antifreeze) (a mixture of 50% ethylene-glycol and 50% water) must not exceed the normal range of the temperature gauge 240°F (116°C) with a 16 psi (110 kPa) radiator cap.

Usually the engine coolant (antifreeze) temperature indicated during operation will be to the left of center in the normal range of the gauge.

#### **Avoid Low Coolant Temperature Operation**

Continual operation at low engine coolant (antifreeze) temperature below the normal range on the gauge 140°F (60°C) can be harmful to the engine. Low engine coolant (antifreeze) temperature can cause incomplete combustion which allows carbon and varnish to form on piston rings and injector nozzles. Also, the unburned fuel can enter the crankcase, diluting the lubricating oil and causing rapid wear to the engine.

## Cooling System Tips – Automatic Transmission

To reduce potential for engine and transmission overheating in high ambient temperature conditions, take the following actions:

- *City Driving* —

When stopped, shift the transmission into NEUTRAL and increase engine idle speed.

- *Highway Driving* —

Reduce your speed.

- *Up Steep Hills* —

Select a lower transmission gear.

- *Air Conditioning* —

Turn it off temporarily.

## Do Not Operate The Engine With Low Oil Pressure

When the engine is at normal operating temperature, the minimum oil pressures required are:

Idle 700 to 800 RPM	10 psi (69 kPa)
Full speed and load	30 psi (207 kPa)

### CAUTION!

**If oil pressure falls to less than normal readings, shut the engine off immediately. Failure to do so could result in immediate and severe engine damage.**

### Do Not Operate The Engine With Failed Parts

All engine failures give some warning before the parts fail. Be on the alert for changes in performance, sounds, and visual evidence that the engine requires service. Some important clues are:

- engine misfiring or vibrating severely
- sudden loss of power
- unusual engine noises
- fuel, oil or coolant leaks
- sudden change, outside the normal operating range, in the engine operating temperature
- excessive smoke
- oil pressure drop

### ENGINE BLOCK HEATER — IF EQUIPPED

The engine block heater warms engine coolant and permits quicker starts in cold weather. Connect the heater cord to a ground-fault interrupter protected 110–115 Volt AC electrical outlet with a grounded, three-wire extension cord.

The engine block heater cord is routed under the hood to the right side and can be located just behind the grille near the headlamp.

**NOTE:** The engine block heater cord is a factory installed option. If your vehicle is not equipped, heater cords are available from your authorized MOPAR® dealer.

The block heater must be plugged in at least one hour to have an adequate warming effect on the coolant.

**WARNING!**

**Remember to disconnect the cord before driving. Damage to the 110–115 Volt electrical cord could cause electrocution.**

**NOTE:** The block heater will require 110 Volts AC and 6.5 Amps to activate the heater element.

**Block Heater Usage**

For ambient temperatures below 0°F (-18°C), engine block heater usage is recommended.

For ambient temperatures below -20°F (-29°C), engine block heater usage is required.

**DIESEL EXHAUST BRAKE (ENGINE BRAKING)**

The purpose of the exhaust brake (engine braking) feature is to supply negative (braking) torque from the engine. Typically, the engine braking is used for, but not limited to, vehicle towing applications where vehicle braking can be achieved by the internal engine power, thereby sparing the mechanical brakes of the vehicle.

Benefits of the exhaust brake are:

- vehicle driving control
- reduced brake fade
- longer brake life
- faster cab warm-up.

The exhaust brake feature will only function when the driver toggles it on by pushing the exhaust brake button until the "Exhaust Brake Indicator" is illuminated. Normal (Full Strength) exhaust brake mode is indicated by a yellow "Exhaust Brake Indicator".



Exhaust Brake Switch

Once the "Exhaust Brake Indicator" is illuminated and the vehicle is moving faster than 5 mph (8 km/h); the exhaust brake will automatically operate when the driver removes pressure from the accelerator pedal. Exhaust braking is most effective when the engine RPM is higher. The automatic transmission will downshift more aggressively in TOW/HAUL mode when the exhaust brake is enabled to increase brake performance.

### CAUTION!

Use of aftermarket exhaust brakes is not recommended and could lead to engine damage

**WARNING!**

**Do not use the exhaust brake feature when driving in icy or slippery conditions as the increased engine braking can cause the rear wheels to slide and the vehicle to swing around with the possible loss of vehicle control, which may cause an accident possibly resulting in personal injury or death.**

**NOTE:** For optimum braking power it is recommended to use the exhaust brake while in TOW/HAUL mode.

The exhaust brake feature can also be used to reduce the engine warm up time. To use the exhaust brake as a warm-up device, the vehicle must be stopped or moving less than 5 mph (8 km/h), the "Exhaust Brake Indicator" must be on, and the coolant temperature must be below 180°F (82°C) and ambient temperature below 60°F (16°C).

**Automatic Smart Exhaust Brake**

Automatic Exhaust Brake technology delivers smoother, less aggressive exhaust braking characteristics during downhill descents. Although it can apply full exhaust braking force if needed, Automatic Exhaust Brake may not apply obvious braking if the vehicle speed is not increasing. Automatic Exhaust Brake is intended to maintain vehicle speed, while Full Exhaust Brake is intended to reduce vehicle speed.

Automatic Exhaust Brake can be enabled by pushing the exhaust brake button again anytime after the normal Full Exhaust Brake has been turned on. The "Exhaust Brake Indicator" in the EVIC will change from Yellow to Green when Automatic Exhaust Brake is enabled. Pushing the exhaust brake button again will toggle the exhaust brake mode to off.

**AUTOMATIC TRANSMISSION — IF EQUIPPED****CAUTION!**

Damage to the transmission may occur if the following precautions are not observed:

- Shift into PARK only after the vehicle has come to a complete stop.
- Shift into or out of REVERSE only after the vehicle has come to a complete stop and the engine is at idle speed.
- Do not shift between PARK, REVERSE, NEUTRAL, or DRIVE when the engine is above idle speed.
- Before shifting into any gear, make sure your foot is firmly pressing on the brake pedal.

**WARNING!**

- Unintended movement of a vehicle could injure those in and near the vehicle. As with all vehicles, you should never exit a vehicle while the engine is running. Before exiting a vehicle, always apply the parking brake, shift the transmission into PARK, turn the engine OFF, and remove the key fob. When the ignition is in the OFF position, the transmission is locked in PARK, securing the vehicle against unwanted movement.
- When leaving the vehicle, always remove the key fob and lock your vehicle.
- Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be

*(Continued)*



**WARNING! (Continued)**

warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), and do not leave the ignition (in a vehicle equipped with Keyless Enter-N-Go™) in the ACC or ON/RUN position. A child could operate power windows, other controls, or move the vehicle.

- It is dangerous to shift out of PARK or NEUTRAL if the engine speed is higher than idle speed. If your foot is not firmly pressing the brake pedal, the vehicle could accelerate quickly forward or in reverse. You could lose control of the vehicle and hit someone or something. Only shift into gear when the engine is idling normally and your foot is firmly pressing the brake pedal.

**NOTE:** You must press and hold the brake pedal while shifting out of PARK.

**Key Ignition Park Interlock**

This vehicle is equipped with a Key Ignition Park Interlock which requires the transmission to be in PARK before the ignition switch can be turned to the full OFF (key removal) position. The key fob can only be removed from the ignition when the ignition is in the full OFF position, and the transmission is locked in PARK whenever the ignition switch is in the full OFF position.

**Brake/Transmission Shift Interlock System**

This vehicle is equipped with a Brake Transmission Shift Interlock System (BTSI) that holds the shift lever in PARK unless the brakes are applied. To shift the transmission out of PARK, the ignition switch must be turned to the ON/RUN position (engine running or not) and the brake pedal must be pressed.

### **Six-Speed Automatic Transmission – If Equipped**

Chassis Cab models (with automatic transmission) use the AS69RC transmission (which is equipped with a Power Take-Off [PTO] access cover on the right side of the transmission case). Pickup models may use either the AS69RC transmission, or the 68RFE transmission (which has no PTO access cover).

The transmission gear position display (located in the instrument cluster) indicates the transmission gear range. The shift lever is mounted on the right side of the steering column. You must press the brake pedal to move the shift lever out of PARK (refer to “Brake/Transmission Shift Interlock System” in this section). To drive, move the shift lever from PARK or NEUTRAL to the DRIVE position. Pull the shift lever toward you when shifting into REVERSE or PARK, or when shifting out of PARK.

The electronically-controlled transmission provides a precise shift schedule. The transmission electronics are

self-calibrating; therefore, the first few shifts on a new vehicle may be somewhat abrupt. This is a normal condition, and precision shifts will develop within a few hundred miles (kilometers).

Only shift from DRIVE to PARK or REVERSE when the accelerator pedal is released and the vehicle is stopped. Be sure to keep your foot on the brake pedal when shifting between these gears.

The transmission shift lever has only PARK, REVERSE, NEUTRAL, and DRIVE shift positions. Manual downshifts can be made using the Electronic Range Select (ERS) shift control (refer to “Electronic Range Select (ERS) Operation” in this section). Pressing the ERS (-/+ ) switches (on the shift lever) while in the DRIVE position will select the highest available transmission gear, and will display that gear in the instrument cluster as 6, 5, 4, 3, 2, 1.

## Gear Ranges

DO NOT race the engine when shifting from PARK or NEUTRAL into another gear range.

**NOTE:** After selecting any gear range, wait a moment to allow the selected gear to engage before accelerating. This is especially important when the engine is cold.

## PARK

This range supplements the parking brake by locking the transmission. The engine can be started in this range. Never attempt to use PARK while the vehicle is in motion. Apply the parking brake when leaving the vehicle in this range.

When parking on a level surface, you may shift the transmission into PARK first, and then apply the parking brake.

When parking on a hill, apply the parking brake before shifting the transmission to PARK, otherwise the load on

the transmission locking mechanism may make it difficult to move the shift lever out of PARK. As an added precaution, turn the front wheels toward the curb on a downhill grade and away from the curb on an uphill grade.

On four-wheel drive vehicles be sure that the transfer case is in a drive position.

### WARNING!

- **Never use the PARK position as a substitute for the parking brake. Always apply the parking brake fully when parked to guard against vehicle movement and possible injury or damage.**
- **Your vehicle could move and injure you and others if it is not completely in PARK. Check by trying to move the shift lever out of PARK with the brake pedal released. Make sure the transmission is in PARK before leaving the vehicle.**

*(Continued)*

**WARNING! (Continued)**

- It is dangerous to shift out of PARK or NEUTRAL if the engine speed is higher than idle speed. If your foot is not firmly pressing the brake pedal, the vehicle could accelerate quickly forward or in reverse. You could lose control of the vehicle and hit someone or something. Only shift into gear when the engine is idling normally and your foot is firmly pressing the brake pedal.
- Unintended movement of a vehicle could injure those in and near the vehicle. As with all vehicles, you should never exit a vehicle while the engine is running. Before exiting a vehicle, always apply the parking brake, shift the transmission into PARK, turn the engine OFF, and remove the key fob. When the ignition is in the OFF position, the transmission is locked in PARK, securing the vehicle against unwanted movement.

*(Continued)*

**WARNING! (Continued)**

- When leaving the vehicle, always remove the key fob and lock your vehicle.
- Never leave children alone in a vehicle, or with access to an unlocked vehicle. Allowing children to be in a vehicle unattended is dangerous for a number of reasons. A child or others could be seriously or fatally injured. Children should be warned not to touch the parking brake, brake pedal or the shift lever. Do not leave the key fob in or near the vehicle (or in a location accessible to children), and do not leave the ignition (in a vehicle equipped with Keyless Enter-N-Go™) in the ACC or ON/RUN position. A child could operate power windows, other controls, or move the vehicle.

**CAUTION!**

- Before moving the shift lever out of PARK, you must turn the ignition switch from the OFF position to the ON/RUN position, and also press the brake pedal. Otherwise, damage to the shift lever could result.
- DO NOT race the engine when shifting from PARK or NEUTRAL into another gear range, as this can damage the drivetrain.

The following indicators should be used to ensure that you have engaged the transmission into the PARK position:

- When shifting into PARK, pull the shift lever toward you and move it all the way counterclockwise until it stops.

- Release the shift lever and make sure it is fully seated in the PARK gate.
- Look at the transmission gear position display and verify that it indicates the PARK position.
- With brake pedal released, verify that the shift lever will not move out of PARK.

**REVERSE**

This range is for moving the vehicle backward. Shift into REVERSE only after the vehicle has come to a complete stop.

**NEUTRAL**

Use this range when the vehicle is standing for prolonged periods with the engine running. The engine may be started in this range. Set the parking brake and shift the transmission into PARK if you must leave the vehicle.

**WARNING!**

Do not coast in NEUTRAL and never turn off the ignition to coast down a hill. These are unsafe practices that limit your response to changing traffic or road conditions. You might lose control of the vehicle and have a collision.

**CAUTION!**

Towing the vehicle, coasting, or driving for any other reason with the transmission in NEUTRAL can cause severe transmission damage. Refer to "Recreational Towing" in "Starting And Operating" and "Towing A Disabled Vehicle" in "What To Do In Emergencies" for further information.

**DRIVE**

This range should be used for most city and highway driving. It provides the smoothest upshifts and downshifts, and the best fuel economy. The transmission automatically upshifts through underdrive first, second, and third gears, direct fourth gear and overdrive fifth and sixth gears. The DRIVE position provides optimum driving characteristics under all normal operating conditions.

When frequent transmission shifting occurs (such as when operating the vehicle under heavy loading conditions, in hilly terrain, traveling into strong head winds, or while towing heavy trailers), use the Electronic Range Select (ERS) shift control (refer to "Electronic Range Select (ERS) Operation" in this section) to select a lower gear range. Under these conditions, using a lower gear range will improve performance and extend transmission life by reducing excessive shifting and heat buildup.

If the transmission temperature exceeds normal operating limits, the powertrain controller will modify the transmission shift schedule and expand the range of torque converter clutch engagement. This is done to prevent transmission damage due to overheating.

If the transmission becomes extremely hot or is in danger of overheating, the “Transmission Temperature Warning Light” may illuminate and the transmission may operate differently until the transmission cools down.

**NOTE:** Use caution when operating a heavily loaded vehicle at low speeds (such as towing a trailer up a steep grade, or in stop-and-go traffic) during hot weather. In these conditions, torque converter slip can impose a significant additional heat load on the cooling system. Downshifting the transmission to the lowest possible gear (when climbing a grade), or shifting to NEUTRAL (when stopped in heavy traffic) can help to reduce this excess heat generation.

During cold temperatures, transmission operation may be modified depending on engine and transmission temperature as well as vehicle speed. This feature improves warm up time of the engine and transmission to achieve maximum efficiency. Engagement of the torque converter clutch is inhibited until the transmission fluid is warm (see the “Note” under “Torque Converter Clutch” in this section). On Pickup models with 68RFE transmission, top overdrive gear is also inhibited until the transmission fluid is warm, and during extremely cold temperatures (-16°F [-27°C] or below), operation may briefly be limited to first and direct gears only. On trucks with AS69RC transmission, fifth and sixth gears may be inhibited briefly on cold starts below 41°F (5°C), and during very cold temperatures (-4°F [-20°C] or below), operation may briefly be limited to third gear only. During this condition, the ability of the vehicle to accelerate under heavily loaded conditions may be reduced. In all cases, normal operation will resume once the transmission temperature has risen to a suitable level.

## Transmission Limp Home Mode

Transmission function is monitored electronically for abnormal conditions. If a condition is detected that could result in transmission damage, Transmission Limp Home Mode is activated. In this mode, the transmission remains in fourth gear (for 68RFE transmission) or third gear (for AS69RC transmission) regardless of which forward gear is selected. If an AS69RC-equipped truck enters Limp Home Mode at highway speeds, it will initially engage fifth gear, until the vehicle slows to a speed where third gear can be engaged. PARK, REVERSE, and NEUTRAL will continue to operate. The Malfunction Indicator Light (MIL) may be illuminated. Limp Home Mode allows the vehicle to be driven to an authorized dealer for service without damaging the transmission.

In the event of a momentary problem, the transmission can be reset to regain all forward gears by performing the following steps:

1. Stop the vehicle.
2. Shift the transmission into PARK.
3. Turn the ignition switch to the OFF position.
4. Wait approximately 10 seconds.
5. Restart the engine.
6. Shift into the desired gear range. If the problem is no longer detected, the transmission will return to normal operation.

**NOTE:** Even if the transmission can be reset, we recommend that you visit your authorized dealer at your earliest possible convenience. Your authorized dealer has diagnostic equipment to determine if the problem could recur.

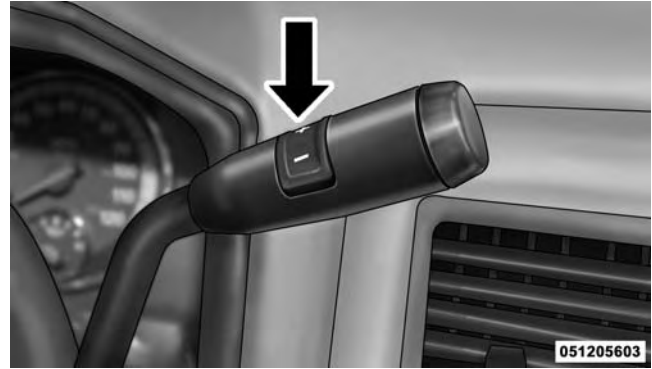
If the transmission cannot be reset, authorized dealer service is required.



## Electronic Range Select (ERS) Operation

The Electronic Range Select (ERS) shift control allows the driver to limit the highest available gear when the shift lever is in the DRIVE position. For example, if you shift the transmission into 3 (third gear), the transmission will not shift above third gear, but will shift down into second and first gears normally.

You can switch between DRIVE and ERS mode at any vehicle speed. When the shift lever is in the DRIVE position, the transmission will operate automatically, shifting between all available gears. Tapping the ERS (-) switch will activate ERS mode, display the current gear in the instrument cluster, and maintain that gear as the top available gear. Once in ERS mode, tapping the ERS (-) or (+) switch will change the top available gear.



**Column Shift Lever**

To exit ERS mode, simply press and hold the ERS (+) switch until "D" is once again displayed in the transmission gear position indicator in the instrument cluster.

**WARNING!**

Do not downshift for additional engine braking on a slippery surface. The drive wheels could lose their grip and the vehicle could skid, causing a collision or personal injury.

Screen Display	1	2	3	4	5	6	D
Actual Gear(s) Allowed	1	1-2	1-3	1-4	1-5	1-6	1-6

**NOTE:** To select the proper gear position for maximum deceleration (engine braking), simply press and hold the ERS (-) switch down. The transmission will shift to the range from which the vehicle can best be slowed down.

**CAUTION!**

When using ERS for engine braking while descending steep grades, be careful not to overspeed the engine. Apply the brakes as needed to prevent engine overspeed.

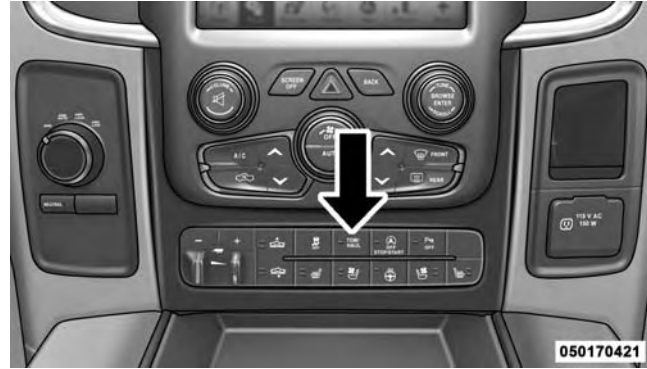
**Overdrive Operation**

The automatic transmission includes an electronically controlled Overdrive (fifth and sixth gears). The transmission will automatically shift into Overdrive if the following conditions are present:

- the shift lever is in the DRIVE position,
- the transmission fluid has reached an adequate temperature,
- the engine coolant has reached an adequate temperature,
- vehicle speed is sufficiently high, and
- the TOW/HAUL switch has not been activated.

## When To Use TOW/HAUL Mode

When driving in hilly areas, towing a trailer, carrying a heavy load, etc., and frequent transmission shifting occurs, press the TOW/HAUL switch to activate TOW/HAUL mode. This will improve performance and reduce the potential for transmission overheating or failure due to excessive shifting. When operating in TOW/HAUL mode, transmission upshifts are delayed, and the transmission will automatically downshift (for engine braking) when the throttle is closed and/or during steady braking maneuvers.



### TOW/HAUL Switch

The “TOW/HAUL Indicator Light” will illuminate in the instrument cluster to indicate that TOW/HAUL mode has been activated. Pressing the switch a second time restores normal operation. Normal operation is always the default at engine start-up. If TOW/HAUL mode is desired, the switch must be pressed each time the engine is started.

**WARNING!**

**Do not use the “TOW/HAUL” feature when driving in icy or slippery conditions. The increased engine braking could cause the rear wheels to slide, and the vehicle to swing around with the possible loss of vehicle control, which could cause an accident possibly resulting in personal injury or death.**

**Torque Converter Clutch**

A feature designed to improve fuel economy has been included in the automatic transmission on your vehicle. A clutch within the torque converter engages automatically at calibrated speeds. This may result in a slightly different feeling or response during normal operation in the upper gears. When the vehicle speed drops or during some accelerations, the clutch automatically disengages.

**NOTE:**

- The torque converter clutch will not engage (and 68RFE-equipped trucks will not shift to sixth gear), until the transmission fluid and engine coolant are warm [usually after 1 to 3 miles (2 to 5 km) of driving]. Because the engine speed is higher when the torque converter clutch is not engaged, it may seem as if the transmission is not shifting properly when cold. This is normal. Using the Electronic Range Select (ERS) shift control, when the transmission is sufficiently warm, will demonstrate that the transmission is able to shift into and out of Overdrive.
- If the vehicle has not been driven for several days, the first few seconds of operation after shifting the transmission into gear may seem sluggish. This is due to the fluid partially draining from the torque converter into the transmission. This condition is normal and will not cause damage to the transmission. The torque converter will refill within five seconds after starting the engine.

## MANUAL TRANSMISSION — IF EQUIPPED

**WARNING!**

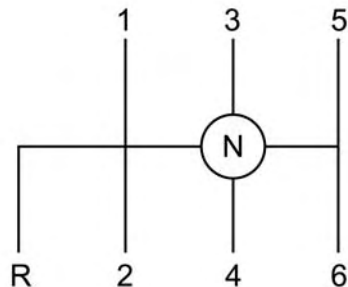
You or others could be injured if you leave the vehicle unattended without having the parking brake fully applied. The parking brake should always be applied when the driver is not in the vehicle, especially on an incline.

**CAUTION!**

Never drive with your foot resting on the clutch pedal, or attempt to hold the vehicle on a hill with the clutch pedal partially engaged, as this will cause abnormal wear on the clutch.

**NOTE:** During cold weather, you may experience increased effort in shifting until the transmission fluid warms up. This is normal.

## Shifting



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## Shift Pattern

Truck models with manual transmission are equipped with a clutch interlocking ignition system. The clutch pedal must be fully pressed to start the vehicle.

Fully press the clutch pedal before shifting gears. As you release the clutch pedal, lightly press the accelerator pedal.

This transmission has a “creeper” first gear which should be used to start from a standing position when carrying a payload or towing a trailer. Damage to the clutch can result from starting in second or third gear with a loaded vehicle. An unloaded vehicle may be launched in second gear. Use each gear in numerical order – do not skip a gear.

**NOTE:** When loaded, pulling a trailer or on a grade, the truck should always start in first gear and not skip gears.

### Recommended Vehicle Shift Speeds

To utilize your manual transmission efficiently for both fuel economy and performance, it should be upshifted as listed in recommended shift speed chart. Shift at the vehicle speeds listed for acceleration. When heavily loaded or pulling a trailer these recommended up-shift speeds may not apply.

### Maximum Recommended Up-Shift Speeds

Gear Selection	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6
Maximum Speed	7 mph (11 km/h)	15 mph (24 km/h)	25 mph (40 km/h)	40 mph (64 km/h)	45 mph (72 km/h)

## Downshifting

Moving from a high gear down to a lower gear is recommended to preserve brakes when driving down steep hills. In addition, downshifting at the right time provides better acceleration when you desire to resume speed. Downshift progressively. Do not skip gears to avoid overspeeding the engine and clutch.

### WARNING!

Do not downshift for additional engine braking on a slippery surface. The drive wheels could lose their grip and the vehicle could skid.

### CAUTION!

When descending a hill, be very careful to downshift one gear at a time to prevent overspeeding the engine which can cause valve damage, and/or clutch disc damage even if the clutch pedal is pressed.

### Maximum Recommended Downshift Speeds

### CAUTION!

Failure to follow the recommended downshifting speeds may cause the engine to overspeed and/or damage the clutch disc even if the clutch pedal is pressed.

### Maximum Recommended Downshifting Speeds

Gear Selection	6 to 5	5 to 4	4 to 3	3 to 2	2 to 1
Maximum Speed	68 mph (109 km/h)	50 mph (80 km/h)	32 mph (51 km/h)	19 mph (31 km/h)	10 mph ) (16 km/h

#### CAUTION!

If you skip a gear while downshifting or downshift at too high of a vehicle speed, these conditions may cause the engine to overspeed if too low of a gear is selected and the clutch pedal is released. Damage to the clutch and the transmission can result from skipping a gear while downshifting or downshifting at too high of a vehicle speed even if the clutch pedal is held pressed (i.e., not released).

### Reverse Shifting

To shift into REVERSE (R), bring the vehicle to a complete stop. Press the clutch and pause briefly to allow the

gear train to stop rotating. Beginning from the NEUTRAL (N) position, move the shift lever in one quick smooth motion straight across and into the REVERSE (R) area (the driver will feel a firm “click” as the shifter passes the “knock-over”). Complete the shift by pulling the shift lever into REVERSE (R).

The “knock-over” prevents the driver from accidentally entering the REVERSE (R) shift area and warns the driver that they are about to shift the transmission into REVERSE (R). Due to this feature, a slow shift to REVERSE (R) can be perceived as a high shift effort.

To shift out of REVERSE bring the vehicle to a complete stop and press the clutch. Shifting out of REVERSE prior to a complete stop may cause high shift effort.



## POWER TAKE OFF OPERATION — IF EQUIPPED (CHASSIS CAB ONLY)

This vehicle when equipped with either the AS69RC automatic six-speed or G-56 manual six-speed transmissions, will allow for an aftermarket upfit with a transmission driven PTO (power take off). The customer will have the ability to operate the PTO in either a “stationary” or “mobile” mode. The vehicles will be factory set to the “stationary” mode. To select ‘mobile mode’ You will need to enter the commercial vehicle menu on the EVIC screen and select mobile PTO mode. Details of the PTO selection modes and further PTO information is available at the Ram Truck Bodybuilders web site. [www.rambodybuilder.com](http://www.rambodybuilder.com)

### AS69RC Six-Speed Automatic Transmission Only

The PTO drive gear (part of the AS69RC) operates at torque converter turbine speed. The turbine speed will be

less than engine speed when the torque converter clutch is not engaged and will be same as engine speed when the torque converter clutch is engaged.

### Stationary Mode

To operate the PTO in this mode the vehicle must meet the following conditions:

- Be in PARK position (vehicles equipped with automatic transmission)
- PTO switch has been activated
- Parking brake applied (vehicles equipped with manual transmission)
- Brake pedal must not be applied
- Vehicle engine must be running
- No vehicle, brake or clutch switch faults present

- PTO must be correctly installed using the vehicle provided circuits

The Electronic Vehicle Information Center (EVIC) will display a "PTO On" message for five seconds if the above conditions are met. Otherwise, the EVIC will display a message "To Operate PTO Shift To Park" indicating what operator action should be taken to engage the PTO mode.

The customer has the choice to operate the PTO by utilizing the cruise control switches or by utilizing a remote control (provided by the PTO supplier). To operate the feature using the cruise control switches, the customer must first activate the PTO switch which will turn on the PTO. In order to increase or decrease the engine idle speed, to optimize the PTO function, the "RESUME/ACCEL" and "DECEL" cruise switches can be used respectively. To disengage PTO operation and return to "standard vehicle operation" simply toggle the PTO switch to the OFF position.

The torque converter clutch (TCC) will automatically engage at engine speeds above 1,200 RPM (engine speed) in PTO stationary mode. Once engaged, the TCC will remain applied and will not disengage until the engine speed falls below 1,000 RPM. TCC engagement is desirable for certain types of PTO applications (Automatic Transmission Only).

To operate the PTO via a remote switch, the customer must make sure the above conditions are met. It is vital for proper operation that the PTO and remote have been installed correctly, paying special attention to ensure the vehicle provided wiring has been connected properly. This is the responsibility of the installer of the PTO and switches/remote system. It is the responsibility of the PTO manufacturer to ensure that their electrical (switches and remote) system is compatible with the vehicle's electrical architecture and software functionality.

**NOTE:** Single set speed can be programmed via the PTO menu on the EVIC screen. Further details are available at the Ram Truck Bodybuilders website. [www.rambodybuilder.com](http://www.rambodybuilder.com) [www.ramtrucks.com](http://www.ramtrucks.com).

### Mobile Mode

To operate the PTO in this mode the vehicle must meet the following conditions:

- Mobile mode is activated via the menu on the EVIC screen.
- (on/off) switch has been activated
- Vehicles with automatic transmission must be in PARK or DRIVE
- Parking brake must not be applied

- Brake pedal must not be applied
- No vehicle, brake or clutch switch faults present
- Vehicle engine must be running
- PTO must be correctly installed using the vehicle provided circuits

The customer may choose to use the PTO while the vehicle is moving. To do so, the PTO function must be activated prior to taking the vehicle out of PARK. This is accomplished by activating the upfitter-provided PTO on/off switch. At this point, the customer may place the vehicle in a forward or reverse gear and have PTO operation once the vehicle begins to move. To disengage PTO operation and return to “standard vehicle operation” simply toggle the on/off switch to the OFF position.

**NOTE:** For application specific information with respect to PTO and pump requirements and additional vehicle information (wiring schematics, preset idle values, engine speed limits, and vehicle hardware and software requirements) please refer to the Body Builders Guide by accessing [www.rambodybuilder.com](http://www.rambodybuilder.com) and choosing the appropriate links.

### **Power Take Off – Aftermarket Installation**

If you did not order the PTO (Power Take Off) Prep Package from the factory and want to convert your vehicle, refer to the Body Builder's Guide at [www.rambodybuilder.com](http://www.rambodybuilder.com) or contact the manufacturer directly at (866) 205-4102 (toll free).

### **ENGINE RUNAWAY**

Diesel engine runaway is a rare condition affecting diesel engines, where the engine consumes its own lubrication oil and runs at higher and higher RPM until it overspeeds

to a point where it destroys itself due to either mechanical failure or engine seizure through lack of lubrication.

#### **WARNING!**

**In case of engine runaway due to flammable fumes from fuel spills or turbocharger oil leaks being sucked into the engine, do the following to help avoid personal injury and/or vehicle damage:**

- 1. Turn the ignition switch to the OFF position.**
- 2. Using a CO2 or dry chemical type fire extinguisher, direct the spray from the fire extinguisher into the grille on the passenger side so that the spray enters the engine air intake.**

**The inlet for the engine air intake is located behind the passenger side headlamp and receives air through the grille.**

## FUEL REQUIREMENTS

Use good quality diesel fuel from a reputable supplier in your vehicle. Federal law requires that you must fuel this vehicle with Ultra Low Sulfur Highway Diesel fuel (15 ppm Sulfur maximum) and prohibits the use of Low Sulfur Highway Diesel fuel (500 ppm Sulfur maximum) to avoid damage to the emissions control system. For most year-round service, No. 2 diesel fuel meeting ASTM (formerly known as the American Society for Testing and Materials) specification D-975 Grade S15 will provide good performance. If the vehicle is exposed to extreme cold (below 20°F or -7°C), or is required to operate at colder-than-normal conditions for prolonged periods, use climatized No. 2 diesel fuel or dilute the No. 2 diesel fuel with 50% No. 1 diesel fuel. This will provide better protection from fuel gelling or wax-plugging of the fuel filters.

### WARNING!

**Do not use alcohol or gasoline as a fuel blending agent. They can be unstable under certain conditions and hazardous or explosive when mixed with diesel fuel.**

Diesel fuel is seldom completely free of water. To prevent fuel system trouble, drain the accumulated water from the fuel/water separator using the fuel/water separator drain provided on both fuel filters. If you buy good quality fuel and follow the cold weather advice above, fuel conditioners should not be required in your vehicle. If available in your area, a high cetane “premium” diesel fuel may offer improved cold-starting and warm-up performance.

**CAUTION!**

If the “Water in Fuel Indicator Light” remains on, DO NOT START engine before you drain the water from the fuel filters to avoid engine damage. Refer to “Maintenance Procedures/Draining Fuel/Water Separator Filter” in “Maintaining Your Vehicle” for further information.

**Fuel Specifications**

The Cummins® diesel engine has been developed to take advantage of the high energy content and generally lower cost No. 2 Ultra Low Sulfur diesel fuel or No. 2 Ultra Low Sulfur climatized diesel fuels. Experience has shown that it also operates on No. 1 Ultra Low Sulfur diesel fuels or other fuels within specification.

**NOTE:**

- A maximum blend of 20% biodiesel meeting ASTM specification D-6751 may be used with your Cummins® diesel engine.

- In addition, commercially available fuel additives are not necessary for the proper operation of your Cummins® diesel engine.
- No. 1 Ultra Low Sulfur diesel fuel should only be used where extended arctic conditions (-10°F or -23°C) exist.

**Bio-Diesel Fuel Requirements****Chassis Cab Models**

A maximum blend of 5% biodiesel meeting ASTM specification D975 may be used with your Cummins diesel engine. If operation with Biodiesel blends greater than 5% but not greater than 20% (B6 B20) is desired, the truck must first be reconfigured by an authorized Ram dealer and the provisions in the following section must be adhered to.

## Pickup Models And Chassis Cab Models Ordered With B20 Option

Your vehicle has been validated and approved for the use of Biodiesel in blends up to 20% (B20) provided that you comply with the requirements outlined below. It is important that you understand and comply with these requirements. Failure to comply with Oil Change requirements for vehicles operating on biodiesel blends up to B20 will result in premature engine wear. Such wear is not covered by the New Vehicle Limited Warranty.

Biodiesel is a fuel produced from renewable resources typically derived from animal fat, rapeseed oil (Rapeseed Methyl Ester (RME) base), or soybean oil (Soy Methyl Ester (SME or SOME) base). Biodiesel fuel has inherent limitations which require that you understand and adhere to the following requirements if you use blends of

Biodiesel greater than 5% but not greater than 20% (B6-B20). There are no unique restrictions for the use of B5. Use of blends greater than 20% is not approved. Use of blends greater than 20% can result in engine damage. Such damage is not covered by the New Vehicle Limited Warranty.

## Fuel Quality - Must Comply With ASTM Standards

The quality of Biodiesel fuel may vary widely. Only fuel produced by a BQ9000 supplier to the following specifications may be blended to meet Biodiesel blend (B6 - B20) fuel meeting ASTM specification D-7467:

- Pretrodiesel fuel meeting ASTM specification D-975 and Biodiesel fuel (B100) meeting ASTM specification D-6751.

### **Fuel Oxidation Stability - Must Use Fuel Within Six Months Of Manufacture**

Biodiesel fuel has poor oxidation stability which can result in long term storage problems. Fuel produced to approved ASTM standards, if stored properly, provides for protection against fuel oxidation for up to six months.

### **Fuel Water Separation - Must Use Mopar/Cummins Approved Fuel Filter Elements**

You must use Mopar/Cummins approved fuel filter elements in both your engine mounted filter and frame mounted filter.

Biodiesel fuel has a natural affinity to water and water accelerates microbial growth. Your Mopar/Cummins filtration system is designed to provide adequate fuel water separation capabilities.

### **Bio-Diesel Fuel Properties – Low Ambient Temperatures**

Biodiesel fuel may gel or solidify at low ambient temperatures, which may pose problems for both storage and operation. Precautions can be necessary at low ambient temperatures, such as storing the fuel in a heated building or a heated storage tank, or using cold temperature additives.

### **Fuel In Oil Dilution - Must Adhere To Required Oil Change Interval**

Fuel dilution of lubricating oil has been observed with the use of Biodiesel fuel. Fuel in oil must not exceed 5 percent. To ensure this limit is met your oil change interval must be maintained to the following schedule:

- Ram PickUp 2500/3500 Only –15,000 Miles\*
- Ram 3500/4500/5500 Chassis Cab – 12,500 Miles\*

(\*unless otherwise notified with a oil service message)

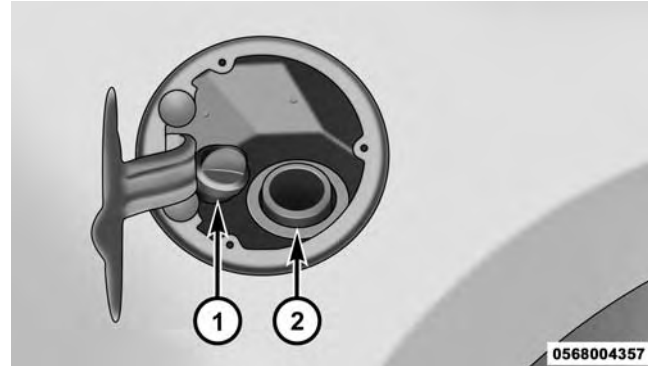


**CAUTION!**

- Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) pickup or 12,500 miles (20 000 km) chassis cab if operation occurs with greater than 5% biodiesel blends. Oil change intervals should not exceed 6 months in either case. Failure to comply with these Oil Change requirements for vehicles operating on biodiesel blends up to B20 may result in premature engine wear. Such wear is not covered by the New Vehicle Limited Warranty.
- B20 Biodiesel capable: The engine may suffer severe damage if operated with concentrations of Biodiesel higher than 20%.

**ADDING FUEL – 2500/3500 DIESEL MODELS**

1. Open the fuel filler door.



Fuel and Diesel Exhaust Fluid Fill Location

- 1 — Diesel Exhaust Fluid Fill Location
- 2 — Fuel Fill Location

## 88 STARTING AND OPERATING

2. There is no fuel filler cap. A flapper door inside the filler pipe seals the system.
3. Insert the fuel nozzle fully into the filler pipe – the nozzle opens and holds the flapper door while refueling.
4. Fill the vehicle with fuel – when the fuel nozzle “clicks” or shuts off the fuel tank is full.
5. Remove the fuel nozzle and close the fuel door.

### Emergency Fuel Can Refueling

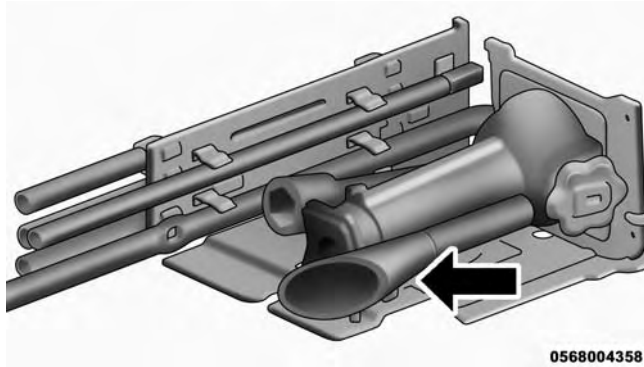
Most fuel cans will not open the flapper door.

A funnel is provided to open the flapper door to allow emergency refueling with a fuel can.



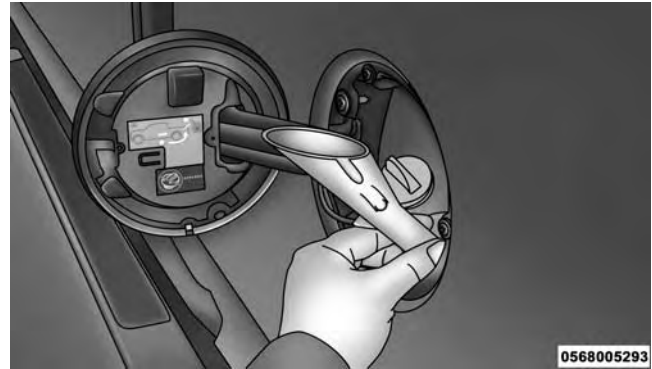
Diesel Fuel and DEF Fluid Filler Door

1. Retrieve fuel funnel from the jack kit located under the front passenger seat.



**Fuel Fill Funnel Location 2500/3500 Models**

2. Insert funnel into same filler pipe opening as the fuel nozzle.



**Emergency Fuel Fill Location**

3. Ensure funnel is inserted fully to hold flapper door open.
4. Pour fuel into funnel opening.
5. Remove funnel from filler pipe, clean off prior to putting back in the jack kit.

**CAUTION!**

To avoid fuel spillage and overfilling, do not “top off” the fuel tank after filling.

**WARNING!**

- Never have any smoking materials lit in or near the vehicle when the fuel door is open or the tank is being filled.
- Never add fuel when the engine is running. This is in violation of most state and federal fire regulations and may cause the “Malfunction Indicator Light” to turn on.
- A fire may result if fuel is pumped into a portable container that is inside of a vehicle. You could be burned. Always place fuel containers on the ground while filling.

**ADDING FUEL – CHASSIS CAB MODELS****CAUTION!**

To avoid fuel spillage and overfilling, do not “top off” the fuel tank after filling.

**NOTE:**

- When the fuel nozzle “clicks” or shuts off, the fuel tank is full.
- Tighten the fuel filler cap until you hear a “clicking” sound. This is an indication that the fuel filler cap is properly tightened.
- Make sure that the fuel filler cap is tightened each time the vehicle is refueled.

**WARNING!**

A fire may result if fuel is pumped into a portable container that is on a truck bed. You could be burned. Always place fuel containers on the ground while filling.

**Fuel Filler Cap**

If the fuel filler cap is lost or damaged, be sure the replacement cap is for use with this vehicle.

**CAUTION!**

Damage to the fuel system or emission control system could result from using an improper fuel tank filler tube cap. A poorly fitting cap could let impurities into the fuel system.

**WARNING!**

- Never have any smoking materials lit in or near the vehicle when the fuel filler cap is removed or the tank filled.
- Never add fuel to the vehicle when the engine is running.

**Avoid Using Contaminated Fuel**

Fuel that is contaminated by water or dirt can cause severe damage to the engine fuel system. Proper maintenance of the engine fuel filter and fuel tank is essential. Refer to "Maintenance Procedures" in "Maintaining Your Vehicle" for further information.

## Bulk Fuel Storage – Diesel Fuel

If you store quantities of fuel, good maintenance of the stored fuel is also essential. Fuel contaminated with water will promote the growth of “microbes.” These microbes form “slime” that will clog fuel filters and lines. Drain condensation from the supply tank and change the line filter on a regular basis.

**NOTE:** When a diesel engine is allowed to run out of fuel, air is pulled into the fuel system.

If the vehicle will not start, refer to “Maintenance Procedures/Priming If The Engine Has Run Out Of Fuel” in “Maintaining Your Vehicle” for further information.

### WARNING!

**Do not open the high pressure fuel system with the engine running. Engine operation causes high fuel pressure. High pressure fuel spray can cause serious injury or death.**

## Diesel Exhaust Fluid Storage

Diesel Exhaust Fluid (DEF) is considered a very stable product with a long shelf life. If DEF is kept in temperatures between 10° to 90°F (-12° to 32°C), it will last a minimum of one year.

DEF is subject to freezing at the lowest temperatures. For example, DEF may freeze at temperatures at or below 12° F (-11° C). The system has been designed to operate in this environment.

**NOTE:** When working with DEF, it is important to know that:

- Any containers or parts that come into contact with DEF must be DEF compatible (plastic or stainless steel). Copper, brass, aluminum, iron or non-stainless steel should be avoided as they are subject to corrosion by DEF.
- If DEF is spilled, it should be wiped up completely.

### **Adding Diesel Exhaust Fluid**

The DEF gauge (located on the Electronic Vehicle Information Center (EVIC) display) will display the level of DEF remaining in the tank. Refer to “Electronic Vehicle Information Center (EVIC)” in “Understanding Your Instrument Panel” for further information.

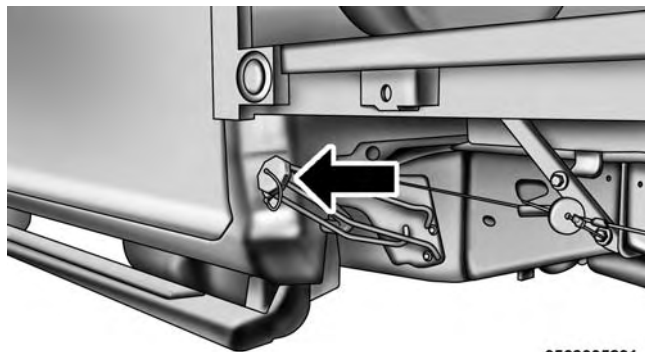
- When the DEF gauge reads 75%, add approximately 2 gallons (7.5 Liters) to fill the DEF tank.
- When the DEF gauge reads 50%, add approximately 4 gallons (15 Liters) to fill the DEF tank.
- When the DEF gauge reads 25%, add approximately 6 gallons (23 Liters) to fill the DEF tank.

**NOTE:** Driving conditions (altitude, vehicle speed, load, etc.) will effect the amount of DEF that is used in your vehicle.

## DEF Fill Procedure

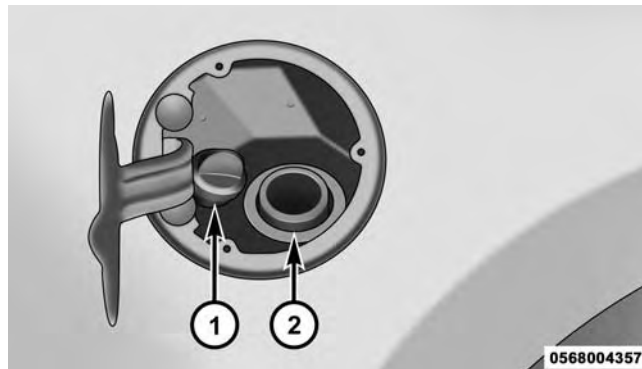
**NOTE:** Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for the correct fluid type.

1. Remove cap from DEF tank (located on drivers side of the vehicle or in fuel door).



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DEF Filler Cap Chassis Cab Models



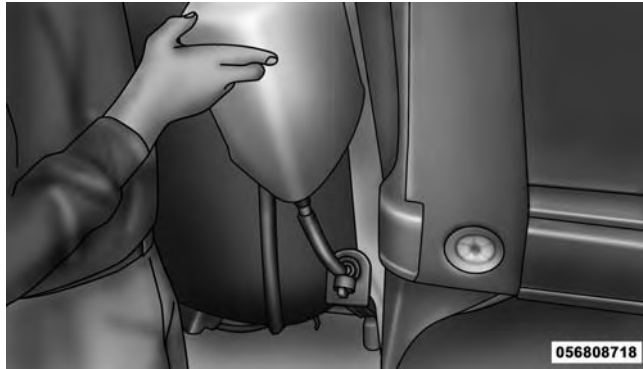
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DEF Filler Cap and Fuel Fill 2500/3500 Models

- 1 — Diesel Exhaust Fluid Fill Location
- 2 — Fuel Fill Location



2. Insert DEF fill adapter/nozzle into DEF tank filler neck.



Filling The DEF Tank

### CAUTION!

- To avoid DEF spillage, and possible damage to the DEF tank from overfilling, do not “top off” the DEF tank after filling.
- **DO NOT OVERFILL.** DEF will freeze below 12 degrees F (-11 degrees C). The DEF system is designed to work in temperatures below the DEF freezing point, however, if the tank is overfilled and freezes, the system could be damaged.
- When DEF is spilled, clean the area immediately with water or use an absorbent material to soak up and spills on the ground.
- Do not attempt to start your engine if DEF is accidentally added to the diesel fuel tank as it can result in severe damage to your engine, including but not limited to failure of the fuel pump and injectors.

3. Stop filling the DEF tank immediately when any of the following happen: DEF stops flowing from the fill bottle into the DEF tank, DEF splashes out the filler neck, or a DEF pump nozzle automatically shuts off.
4. Reinstall cap onto DEF tank.

### Filling the DEF tank in cold climates

DEF will freeze below 12°F (-11°C); however, your vehicle is equipped with an automatic preheating system which allows the DEF system to operate below 12°F (-11°C). When the vehicle is not in operation for an extended period of time with temperatures at or below 12°F (-11°C), the DEF tank could freeze. If the tank is **OVERFILLED** and freezes, it could be damaged, therefore **DO NOT OVERFILL**. To prevent overfilling of the DEF tank if the EVIC indicates **EXHAUST FLUID UNDER 1/2 FULL**, you should only add a **MAXIMUM** of 2 gallons of DEF to the tank to prevent freeze damage due to overfilling. If the EVIC indicates **EXHAUST FLUID LEVEL OK**, do not add DEF.

### DIESEL EXHAUST FLUID

Your vehicle is equipped with a Selective Catalytic Reduction system in order to meet the very stringent diesel emissions standards required by the Environmental Protection Agency. Selective Catalytic Reduction (SCR) is the first and only technology in decades to be as good for the environment as it is good for business and vehicle performance.

The purpose of the SCR system is to reduce levels of NO<sub>x</sub> (oxides of nitrogen emitted from engines) that are harmful to our health and the environment to an almost near-zero level. Small quantities of Diesel Exhaust Fluid (DEF) are injected into the exhaust upstream of a catalyst where, when vaporized, convert smog-forming nitrogen oxides (NO<sub>x</sub>) into harmless nitrogen (N<sub>2</sub>) and water vapor (H<sub>2</sub>O), two natural components of the air we breathe. You can operate with the comfort that your vehicle is contributing to a cleaner, healthier world environment for this and generations to come.

## System Overview

This vehicle is equipped with a Diesel Exhaust Fluid (DEF) injection system and a Selective Catalytic Reduction (SCR) catalyst to meet the emission requirements.

The DEF injection system consists of the following components:

- DEF tank
- DEF pump
- DEF injector
- Electronically-heated DEF lines
- DEF control module
- NOx sensors
- NH3 sensor
- Temperature sensors

- SCR catalyst

The DEF injection system and SCR catalyst enable the achievement of diesel emissions requirements; while maintaining outstanding fuel economy, drivability, torque and power ratings.

**Refer to “Electronic Vehicle Information Center (EVIC)” in “Understanding Your Instrument Panel” for system messages and warnings.**

### NOTE:

- Your vehicle is equipped with a DEF injection system. You may occasionally hear an audible clicking noise. This is normal operation.
- The DEF pump will run for a period of time after engine shutdown to purge the DEF system. This is normal operation.



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# WHAT TO DO IN EMERGENCIES

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## JUMP STARTING

### WARNING!

- To prevent personal injury or damage to clothing, do not allow battery fluid to contact eyes, skin or fabrics. Do not lean over a battery when connecting jumper cables or allow cable clamps to touch each other. Keep open flames or sparks away from battery vent holes. Always wear eye protection when working with batteries.
- Do not use a booster battery or any other booster source that has a greater than 12 Volt system, i.e., do not use a 24 Volt power source.

**NOTE:** Replacement batteries should both be of equal size to prevent damage to the vehicle's charging system.

Your vehicle is equipped with two 12 Volt batteries. If it becomes necessary to use a booster battery with jumper

cables to start a vehicle's engine because its batteries are discharged, the following procedure should be used:

Set the parking brake and place an automatic transmission in PARK (or NEUTRAL for a manual transmission). Turn off lights, heater and other electrical loads. Observe charge indicator (if equipped) in both batteries. If the indicator (if equipped) is light or yellow on either battery, replace that battery.

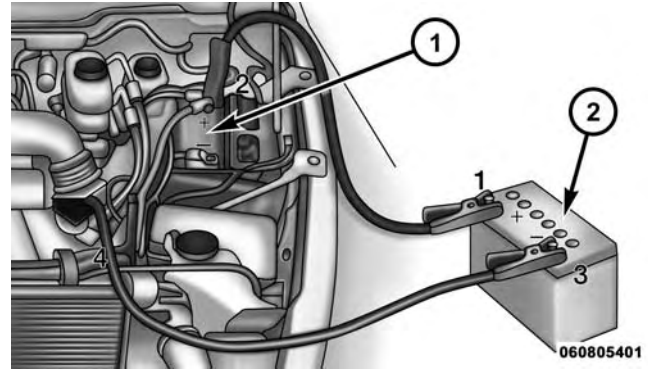
### CAUTION!

Use the jump start procedure only when the charge indicator (if equipped) in both batteries is dark in the center. Do not attempt jump starting when either battery charge indicator (if equipped) is bright or yellow. If the charge indicator (if equipped) has a green dot in the center, failure to start is not due to a discharged battery and cranking system should be checked.

1. Attach one jumper cable to the positive terminal of booster battery and the other end of the same cable to the positive terminal of the discharged battery.

### WARNING!

Do not permit vehicles to touch each other as this could establish a ground connection and personal injury could result.



- 1 — Discharged Battery  
2 — Booster Battery

2. Connect one end of the other jumper cable to negative (-) post of booster battery. Connect the other end of the jumper cable to a good ground on the engine block of the vehicle with the discharged battery. Make sure a good connection is made, free of dirt and grease.

**WARNING!**

- Do not connect the cable to the negative post of the discharge battery. The resulting electrical spark could cause the battery to explode.
- During cold weather when temperatures are below freezing point, electrolyte in a discharged battery may freeze. Do not attempt jump starting because the battery could rupture or explode. The battery temperature must be brought up above freezing point before attempting to jump start.

3. Take care that the clamps from one cable do not inadvertently touch clamps from the other cable. Do not lean over the battery when making connection. The negative connection must provide good electrical conductivity and current carrying capacity.

4. After the engine is started or if the engine fails to start, cables must be disconnected in the following order:
- Disconnect the negative cable at the engine ground.
  - Disconnect the negative cable at the negative post on booster battery.
  - Disconnect the cable from the positive post of both batteries.

**WARNING!**

Any procedure other than above could result in:

- Personal injury caused by electrolyte squirting out the battery vent;
- Personal injury or property damage due to battery explosion;
- Damage to charging system of booster vehicle or of immobilized vehicle.



### **With Portable Starting Unit**

There are many types of these units available. Follow the manufacturer's instructions for necessary precautions and operation.

#### **CAUTION!**

**It is very important that the starting unit operating voltage does not exceed 12 Volts DC or damage to battery, starter motor, alternator, or electrical system may occur.**



# MAINTAINING YOUR VEHICLE

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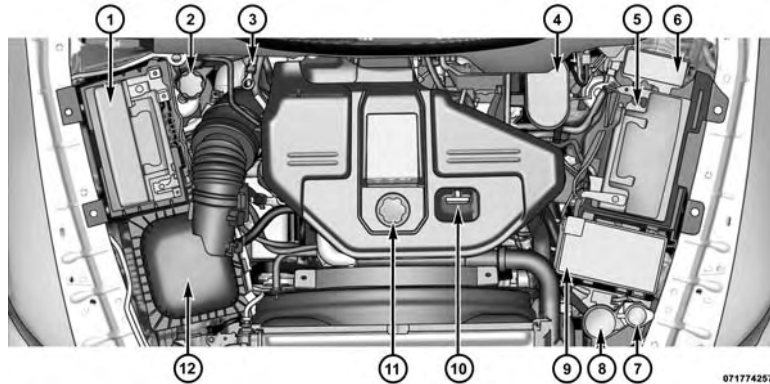
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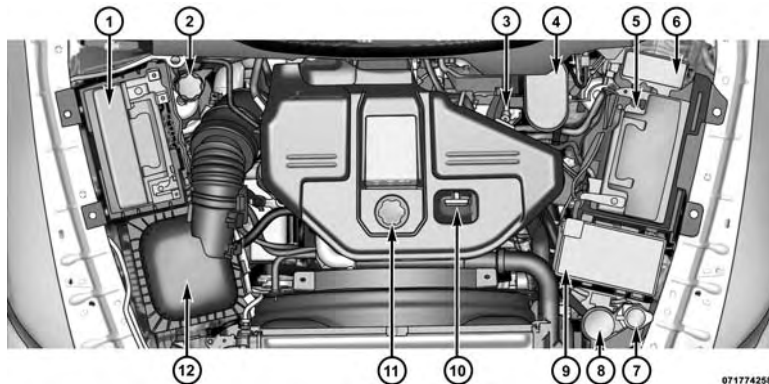
**ENGINE COMPARTMENT — 6.7L DIESEL — SIX-SPEED 68RFE (2500/3500 Models Only)**



- 1 — Battery
- 2 — Engine Coolant Reservoir
- 3 — Automatic Transmission Dipstick (If Equipped)
- 4 — Brake Fluid Reservoir
- 5 — Battery
- 6 — Aux Power Distribution Center

- 7 — Washer Fluid Reservoir
- 8 — Power Steering Fluid Reservoir
- 9 — Power Distribution Center
- 10 — Engine Oil Dipstick
- 11 — Engine Oil Fill
- 12 — Air Cleaner Filter

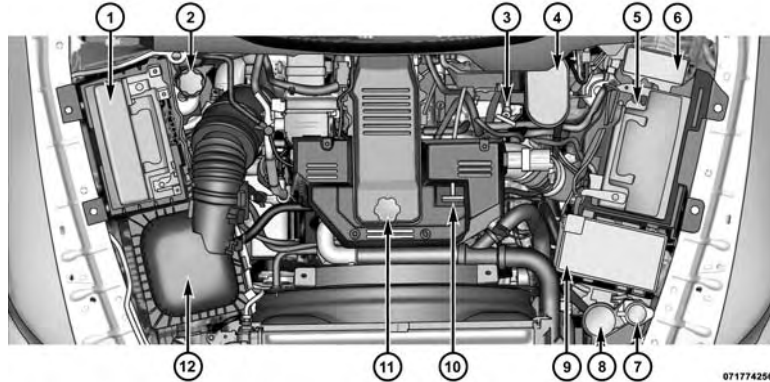
**ENGINE COMPARTMENT — 6.7L DIESEL — SIX-SPEED AS69RC (3500 Models Only)**



- 1 — Battery
- 2 — Engine Coolant Reservoir
- 3 — Automatic Transmission Dipstick (If Equipped)
- 4 — Brake Fluid Reservoir
- 5 — Battery
- 6 — Aux Power Distribution Center

- 7 — Washer Fluid Reservoir
- 8 — Power Steering Fluid Reservoir
- 9 — Power Distribution Center
- 10 — Engine Oil Dipstick
- 11 — Engine Oil Fill
- 12 — Air Cleaner Filter

## ENGINE COMPARTMENT — 6.7L DIESEL (CHASSIS CAB MODELS ONLY)



- 1 — Battery
- 2 — Engine Coolant Reservoir
- 3 — Automatic Transmission Dipstick (If Equipped)
- 4 — Brake Fluid Reservoir
- 5 — Battery
- 6 — Aux Power Distribution Center

- 7 — Washer Fluid Reservoir
- 8 — Power Steering Fluid Reservoir
- 9 — Power Distribution Center
- 10 — Engine Oil Dipstick
- 11 — Engine Oil Fill
- 12 — Air Cleaner Filter

**MAINTENANCE PROCEDURES**

The pages that follow contain the **required** maintenance services determined by the engineers who designed your vehicle.

Besides those maintenance items specified in the fixed maintenance schedule, there are other components which may require servicing or replacement in the future.

**CAUTION!**

- Failure to properly maintain your vehicle or perform repairs and service when necessary could result in more costly repairs, damage to other components or negatively impact vehicle performance. Immediately have potential malfunctions examined by an authorized dealership or qualified repair center.

**CAUTION! (Continued)**

- Your vehicle has been built with improved fluids that protect the performance and durability of your vehicle and also allow extended maintenance intervals. Do not use chemical flushes in these components as the chemicals can damage your engine, transmission, power steering or air conditioning. Such damage is not covered by the New Vehicle Limited Warranty. If a flush is needed because of component malfunction, use only the specified fluid for the flushing procedure.

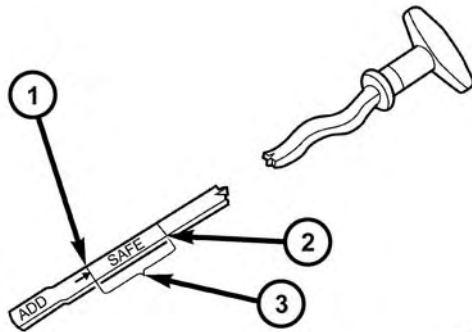
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## Engine Oil

### Checking Oil Level

To assure proper lubrication of your vehicle's engine, the engine oil must be maintained at the correct level. Check the oil level at regular intervals. The best time to check the oil level is before starting the engine after it has been parked overnight. When checking oil after operating the engine, first ensure the engine is at full operating temperature, then wait for 30 minutes after engine shutdown to check the oil.



- 1 — ADD Range
- 2 — Full Mark
- 3 — SAFE Range

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Checking the oil while the vehicle is on level ground will improve the accuracy of the oil level readings. Add oil only when the level on the dipstick is below the “ADD” mark. The total capacity from the low mark to the high mark is 2 qts (1.9L).

### CAUTION!

**Overfilling or underfilling the crankcase will cause oil aeration or loss of oil pressure. This could damage your engine.**

Never operate the engine with oil level below the “ADD” mark or above the upper “SAFE” mark.

### Change Engine Oil

Refer to the “Maintenance Schedule” for the proper maintenance intervals.

### Engine Oil Selection

For best performance and maximum protection under all types of operating conditions, the manufacturer only recommends engine oils that are API CJ-4 certified and meet the requirements of FCA US LLC. Use MOPAR or an equivalent oil meeting FCA US Material Standard MS-10902. Products meeting Cummins CES 20081 may also be used. The identification of these engine oils are typically located on the back of the oil container.

### American Petroleum Institute (API) Engine Oil Identification Symbol



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This symbol means that the oil has been certified by the American Petroleum Institute (API). The manufacturer only recommends API Certified engine oils.

Oils with a high ash content may produce damaging deposits on cylinder head valves and/or aftertreatment system damage. A maximum sulfated ash content of 1.00 mass % is recommended for all oil used in the engine.

The same oil change interval is to be followed for synthetic oil as for petroleum based oil. Also, synthetic oil must meet the same performance specifications as petroleum oil.

### **CAUTION!**

**Do not use chemical flushes in your engine oil as the chemicals can damage your engine. Such damage is not covered by the New Vehicle Limited Warranty.**

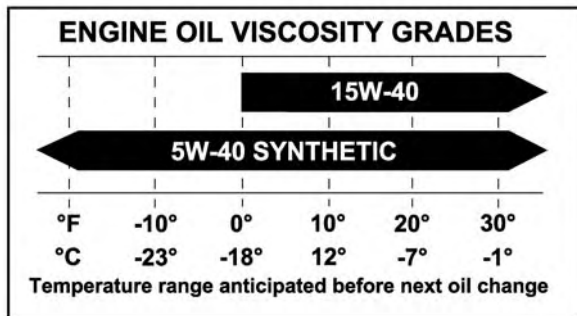
### **Engine Oil Viscosity (SAE Grade)**

In ambient temperatures above 0°F (-18°C), we recommend you use SAE 15W-40 engine oil such as MOPAR, Shell Rotella and Shell Rimula that meets FCA US Material Standard MS-10902 and the API CJ-4 engine oil category is required. Products meeting Cummins CES 20081 may also be used. The identification of these engine oils is typically located on the back of the oil container.

In ambient temperatures below 0°F (-18°C), SAE 5W-40 we recommend you use **synthetic** engine oil such as MOPAR, Shell Rotella and Shell Rimula that meets FCA US Material Standard MS-10902 and the API CJ-4 engine oil category is required.

**CAUTION!**

Failure to use SAE 5W-40 synthetic engine oil in ambient temperatures below 0°F (-18°C) could result in severe engine damage.



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Engine oil not designated by the FCA US or Cummins Material Standards and API CJ-4 should not be used, as engine and exhaust system durability may be compromised. The engine oil filler cap also shows the recommended engine oil viscosity for your engine. For information on engine oil filler cap location, refer to “Engine Compartment” in “Maintaining Your Vehicle” for further information.

### Synthetic Engine Oils

You may use synthetic engine oils if the recommended oil quality requirements are met and the recommended maintenance intervals for oil and filter changes are followed.

## Materials Added To Engine Oil

The manufacturer strongly recommends against the addition of any additives (other than leak detection dyes) to the engine oil. Engine oil is an engineered product and its performance may be impaired by supplemental additives.

## Engine Oil Filter

Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for further information. The engine oil filter should be changed at every engine oil change.

## Disposing Of Used Engine Oil And Oil Filters

Care should be taken in disposing of used engine oil and oil filters from your vehicle. Used oil and oil filters, indiscriminately discarded, can present a problem to the environment. Contact your authorized dealer, service

station or governmental agency for advice on how and where used oil and oil filters can be safely discarded in your area.

## Engine Air Cleaner Filter

### CAUTION!

**All air entering the engine intake must be filtered. The abrasive particles in unfiltered air will cause rapid wear to engine components.**

The condition of the air cleaner filter is monitored by the Engine Control Module. The “SERVICE AIR FILTER” message will display in the Electronic Vehicle Information Center (EVIC) when service is required. Refer to “Electronic Vehicle Information Center (EVIC)” in “Understanding Your Instrument Panel” for further information.

The “SERVICE AIR FILTER” message could be displayed periodically. This is because engine air flow requirements change based on driving conditions. As the filter becomes more restrictive and air flow requirements increase the “SERVICE AIR FILTER” message will be displayed. The message may not be displayed in subsequent drive cycles if the same conditions are not met. The air filter element should be replaced within 250 miles (402 km) from the first time this message is displayed to ensure proper engine operation during all driving conditions.

### **CAUTION!**

**Driving with a restricted air filter can cause engine damage. Driving in dusty environments for extended periods will lead to rapid air filter plugging. Action should be taken as soon as the “SERVICE AIR FILTER” message is displayed.**

If the vehicle experiences a sudden loss of engine power while being driven in heavy snow or rain, or when plowing snow, and/or the “SERVICE AIR FILTER” message is displayed on the EVIC along with a chime that repeats every 60 seconds, visually inspect the air filter for snow/ice build up or extreme water saturation. If the air filter is not damaged, remove all snow/ice and reinstall air filter. If the air filter is damaged, replace filter element.

**NOTE:** The air filter housing contains a Mass Air Flow sensor. This sensor is critical to proper engine operation and component longevity. Any damage or modification to this sensor could result in major engine and/or exhaust aftertreatment damage. We recommend you use MOPAR® brand parts.

Even though your vehicle is equipped with an Air Filter Monitor, a visual inspection of the air cleaner filter element is recommended every 15,000 miles (24,000km)

or 12 months – whichever occurs first. **Under no circumstances should the air cleaner filter element exceed 30,000 miles (48,000 km) or 24 months, whichever comes first.**

### CAUTION!

Many aftermarket performance air filter elements do not adequately filter the air entering the engine. Use of such filters can severely damage your engine.

### Draining Fuel/Water Separator Filter

There are two fuel filter assemblies. One is located on the driver's side of the engine. The best access to this water drain valve is from under the hood. The second one is on the under body, located in front of the rear axle above the drive shaft on pick-up models. The Chassis Cab models second filter location is on the frame behind the front

axle. The best access to this water drain valve is from under the vehicle.

### CAUTION!

- Do not drain the fuel/water separator filters when the engine is running.
- Diesel fuel will damage blacktop paving surfaces. Drain the filters into an appropriate container.

If water is detected in the water separator while the engine is running, or while the ignition switch is in the ON position, the "Water In Fuel Indicator Light" will illuminate and an audible chime will be heard five times. At this point you should stop the engine and drain the water from both of the filters.

**CAUTION!**

**If the “Water In Fuel Indicator Light” remains on, DO NOT START the engine before you drain water from the fuel filters to avoid engine damage.**

If the “Water In Fuel Indicator Light” comes on and a single chime is heard while you are driving, or with the ignition switch in the ON position, there may be a problem with your water separator wiring or sensor. See your authorized dealer for service.

Upon proper draining of the water from both fuel filters, the “Water In Fuel Indicator Light” will remain illuminated for approximately 10 seconds. If the water was drained while the engine was running, the “Water In Fuel Indicator Light” may remain on for approximately three minutes.

**NOTE:** Care should be taken in disposing of used fluids from your vehicle. Used fluids, indiscriminately discarded, can present a problem to the environment. Contact an authorized dealer, service station, or government agency for advice on recycling programs and for where used fluids and filters can be properly disposed of in your area.

Drain the fuel/water separator filters when the “Water In Fuel Indicator Light” is ON. Within 10 minutes of vehicle shutdown, turn the engine mounted filter drain valve (located on the side of the filters) counterclockwise 1/4 turn, and turn the under body mounted filter drain valve (located on the bottom of the filter) counterclockwise 1 full turn. Then turn the ignition switch to the ON position, and allow any accumulated water to drain. Leave the drain valve open until all water and contaminants have been removed. When clean fuel is visible, close the drain valves by turning them fully clockwise, and turn the ignition switch to OFF.



If more than a couple ounces/milliliters of fuel have been drained, follow the directions for “Priming If The Engine Has Run Out Of Fuel.”

### Engine Mounted Fuel Filter Replacement

**NOTE:** Using a fuel filter that does not meet the manufacturer’s filtration and water separating requirements can severely impact fuel system life and reliability.

**NOTE:** The engine mounted filter housing is equipped with a No-Filter-No-Run (NFNR) feature. Engine will not run if:

1. No filter is installed.

2. Inferior/Non-approved filter is used. Use of OEM filter is required to ensure vehicle will run.



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1 — Drain Valve

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**CAUTION!**

- Diesel fuel will damage blacktop paving surfaces. Drain the filter into an appropriate container.
- Do not prefill the fuel filter when installing a new fuel filter. There is a possibility debris could be introduced into the fuel filter during this action. It is best to install the filter dry and allow the in-tank lift pump to prime the fuel system.

1. Ensure engine is turned off.
2. Place drain pan under the fuel filter drain hose.
3. Open the water drain valve 1/4 turn counterclockwise and completely drain fuel and water into the approved container.
4. Close the water drain valve.
5. Remove lid using a socket or strap wrench. Rotate counterclockwise for removal. Remove used o-ring and discard it.
6. Remove the used filter cartridge from the housing and dispose of according to your local regulations.
7. Wipe clean the sealing surfaces of the lid and housing.
8. Install new o-ring back into ring groove on the filter housing and lubricate with clean engine oil.
9. Remove new filter cartridge from plastic bag and install into housing.

**NOTE:** Do not remove cartridge from bag until you reach this step in order to keep cartridge clean.

10. Push down on the cartridge to ensure it is properly seated. **Do not pre-fill the filter housing with fuel.**

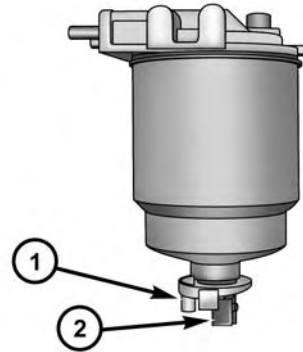
11. Install lid onto housing and tighten to 22.5 ft lbs (30.5 N.m). Do not overtighten the lid.
12. Prime the engine using the procedure in “Priming If The Engine Has Run Out Of Fuel.” Then start the engine and confirm there are no leaks.

### Underbody Mounted Fuel Filter Replacement

**NOTE:** Using a fuel filter that does not meet the manufacturer’s filtration and water separating requirements can severely impact fuel system life and reliability.

**NOTE:** The underbody mounted filter housing will cause the engine not to run if:

1. No filter is installed.



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1 — Drain Valve

2 — WIF Sensor

### CAUTION!

- Diesel fuel will damage blacktop paving surfaces. Drain the filter into an appropriate container.

*(Continued)*

**CAUTION!** *(Continued)*

- **Do not prefill the fuel filter when installing a new fuel filter. There is a possibility debris could be introduced into the fuel filter during this action. It is best to install the filter dry and allow the in-tank lift pump to prime the fuel system.**

1. Ensure engine is turned off.
2. Place drain pan under the fuel filter drain hose.
3. Open the water drain valve 1 full turn counterclockwise and completely drain fuel and water into the approved container.
4. Close the water drain valve.
5. Remove lid using a socket or strap wrench. Rotate counterclockwise for removal. Remove used o-ring and discard it.

6. Remove the used filter cartridge from the housing and dispose of according to your local regulations.
7. Wipe clean the sealing surfaces of the lid and housing.
8. Install new o-ring back into ring groove on the filter housing and lubricate with clean engine oil.

**NOTE:** WIF sensor is re-usable. Service kit comes with new o-ring for filter canister and WIF sensor.

**Priming If The Engine Has Run Out Of Fuel****WARNING!**

**Do not open the high pressure fuel system with the engine running. Engine operation causes high fuel pressure. High pressure fuel spray can cause serious injury or death.**

1. Add a substantial amount of fuel to the tank, approximately 2 to 5 gal (8L to 19L).

2. Turn ignition switch to the start position to engage starter for one second, return ignition switch to run position. This will activate in tank fuel pump for approximately 15 seconds. Repeat this process twice.
3. Start the engine using the "Normal Starting" procedure. Refer to "Starting Procedures" in "Starting and Operating" for further information.

**CAUTION!**

Do not engage the starter motor for more than 15 seconds at a time. Allow two minutes between the cranking intervals.

**NOTE:** The engine may run rough until the air is forced from all the fuel lines.

**WARNING!**

Do not use alcohol or gasoline as a fuel blending agent. They can be unstable under certain conditions and be hazardous or explosive when mixed with diesel fuel.

**CAUTION!**

Due to lack of lubricants in alcohol or gasoline, the use of these fuels can cause damage to the fuel system.

**NOTE:**

- A maximum blend of 20% biodiesel, meeting ASTM specification D-6751 may be used with your Cummins® diesel engine. Use of biodiesel mixture in excess of 20% can negatively impact the fuel filter's ability to separate water from the fuel, resulting in high pressure fuel system corrosion or damage.
- Ethanol blends are not recommended or approved for use with your Cummins® diesel engine.
- In addition, commercially available fuel additives are not necessary for the proper operation of your Cummins® diesel engine.

**Intervention Regeneration Strategy – EVIC  
Message Process Flow**

The Cummins® diesel engine meets all EPA Heavy Duty Diesel Engine Emissions Standards, resulting in the lowest emitting diesel engine ever produced.

To achieve these emissions standards, your vehicle is equipped with a state-of-the-art engine and exhaust system. The engine and exhaust after-treatment system work together to achieve the EPA Heavy Duty Diesel Engine Emissions Standards. These systems are seamlessly integrated into your vehicle and managed by the Cummins® Powertrain Control Module (PCM). The PCM manages engine combustion to allow the exhaust system's catalyst to trap and burn Particulate Matter (PM) pollutants, with no input or interaction on your part.

Additionally, your vehicle has the ability to alert you to additional maintenance required on your truck or engine. Refer to the following messages that may be displayed on your Electronic Vehicle Information Center (EVIC):

### **WARNING!**

**A hot exhaust system can start a fire if you park over materials that can burn. Such materials might be grass or leaves coming into contact with your exhaust system. Do not park or operate your vehicle in areas where your exhaust system can contact anything that can burn.**

#### **Perform Service**

Your vehicle will require emissions maintenance at a set interval. To help remind you when this maintenance is due, the Electronic Vehicle Information Center (EVIC) will display "Perform Service". When the "Perform Service" message is displayed on the EVIC it is necessary to have the

emissions maintenance performed. Emissions maintenance may include replacing the Closed Crankcase Ventilation (CCV) filter element. The procedure for clearing and resetting the "Perform Service" indicator message is located in the appropriate Service Information.

#### **Exhaust System – Regeneration Required Now**

"Exhaust Filter XX% Full Safely Drive at Highway Speeds to Remedy" will be displayed on the Electronic Vehicle Information Center (EVIC) if the exhaust particulate filter reaches 80% of its maximum storage capacity. Under conditions of exclusive short duration and low speed driving cycles, your Cummins® diesel engine and exhaust after-treatment system may never reach the conditions required to remove the trapped PM. If this occurs, the "Exhaust Filter XX% Full Safely Drive at Highway Speeds to Remedy" message will be displayed in the EVIC. If this message is displayed, you will hear one chime to assist in alerting you of this condition.

By simply driving your vehicle at highway speeds for as little as 45 minutes, you can remedy the condition in the particulate filter system and allow your Cummins® diesel engine and exhaust after-treatment system to remove the trapped PM and restore the system to normal operating condition.

#### **Exhaust System – Regeneration In Process Exhaust Filter XX% Full**

Indicates that the Diesel Particulate Filter (DPF) is self-cleaning. Maintain your current driving condition until regeneration is completed.

#### **Exhaust System – Regeneration Completed**

Indicates that the Diesel Particulate Filter (DPF) self-cleaning is completed. If this message is displayed, you will hear one chime to assist in alerting you of this condition.

#### **Exhaust Service Required – See Dealer Now**

Regeneration has been disabled due to a system malfunction. At this point the engine Powertrain Control Module (PCM) will register a fault code, the instrument panel will display a MIL light.

#### **CAUTION!**

**See your authorized dealer, as damage to the exhaust system could occur soon with continued operation.**

#### **Exhaust Filter Full – Power Reduced See Dealer**

The PCM derates the engine in order to limit the likelihood of permanent damage to the after-treatment system. If this condition is not corrected and a dealer service is not performed, extensive exhaust after-treatment damage can occur. In order to correct this condition it will be necessary to have your vehicle serviced by your local authorized dealer.



**CAUTION!**

**See your authorized dealer, as damage to the exhaust system could occur soon with continued operation.**

**Diesel Exhaust Fluid**

Diesel Exhaust Fluid (DEF) sometimes known simply by the name of its active component, UREA—is a key component of selective catalytic reduction (SCR) systems, which help diesel vehicles meet stringent emission regulations. DEF is a liquid reducing agent that reacts with engine exhaust in the presence of a catalyst to convert smog-forming nitrogen oxides (NO<sub>x</sub>) into harmless nitrogen and water vapor.

Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for further information.

You can receive assistance in locating DEF in the United States by calling 866-RAM-INFO (866-726-4636). In Canada call 1-800-465-2001 (English) or 1-800-387-9983 (French)

**Maintenance-Free Batteries**

The top of the maintenance-free batteries are permanently sealed. You will never have to add water, nor is periodic maintenance required.

**NOTE:** Replacement batteries should both be of equal capacity to prevent damage to the vehicle’s charging system.

**CAUTION!**

**It is essential when replacing the cables on the battery that the positive cable is attached to the positive post and the negative cable is attached to the negative post. Battery posts are marked (+) positive and negative (-) and are identified on the battery case. Also, if a “fast charger” is used while the battery is in vehicle, disconnect both vehicle battery cables before connecting the charger to the battery. Do not use a “fast charger” to provide starting voltage.**

**WARNING!**

Battery posts, terminals, and related accessories contain lead and lead compounds. Always wash hands after handling the battery.

**Battery Blanket Usage**

A battery loses 60% of its cranking power as the battery temperature decreases to 0°F (-18°). For the same decrease in temperature, the engine requires twice as much power to crank at the same RPM. The use of 120 Volt AC powered battery blankets will greatly increase starting capability at low temperatures. Suitable battery blankets are available from your authorized MOPAR® dealer.

**Cooling System****WARNING!**

You or others can be badly burned by hot engine coolant (antifreeze) or steam from your radiator. If you see or hear steam coming from under the hood, do not open the hood until the radiator has had time to cool. Never try to open a cooling system pressure cap when the radiator is hot.

**Engine Coolant Checks**

Check the engine coolant (antifreeze) protection every 12 months (before the onset of freezing weather, where applicable). If the engine coolant (antifreeze) is dirty or rusty in appearance, the system should be drained, flushed and refilled with fresh coolant. Check the front of the A/C condenser (if equipped) or radiator for any accumulation of bugs, leaves, etc. If dirty, clean by gently

spraying water from a garden hose vertically down the face of the A/C condenser (if equipped) or the back of the radiator core.

Check the engine cooling system hoses for brittle rubber, cracking, tears, cuts and tightness of the connection at the coolant recovery bottle and radiator. Inspect the entire system for leaks.

With the engine at normal operating temperature (but not running), check the cooling system pressure cap for proper vacuum sealing by draining a small amount of engine coolant (antifreeze) from the radiator drain cock. The radiator drain cock is located in the lower radiator tank. If the cap is sealing properly, the engine coolant (antifreeze) will begin to drain from the coolant expansion bottle. **DO NOT REMOVE THE COOLANT PRESSURE CAP WHEN THE COOLING SYSTEM IS HOT.**

### **Cooling System – Drain, Flush, And Refill**

If the engine coolant (antifreeze) is dirty or contains a considerable amount of sediment, clean and flush with a reliable cooling system cleaner. Follow with a thorough rinsing to remove all deposits and chemicals. Properly dispose of old engine coolant (antifreeze).

Refer to the “Maintenance Schedule” for the proper maintenance intervals.

### **Selection Of Coolant**

Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for further information.

**CAUTION!**

- Mixing of engine coolant (antifreeze) other than specified Organic Additive Technology (OAT) engine coolant (antifreeze), may result in engine damage and may decrease corrosion protection. Organic Additive Technology (OAT) engine coolant is different and should not be mixed with Hybrid Organic Additive Technology (HOAT) engine coolant (antifreeze) or any “globally compatible” coolant (antifreeze). If a non-OAT engine coolant (antifreeze) is introduced into the cooling system in an emergency, the cooling system will need to be drained, flushed, and refilled with fresh OAT coolant (conforming to MS-12106), by an authorized dealer as soon as possible.
- Do not use water alone or alcohol-based engine coolant (antifreeze) products. Do not use additional

**CAUTION! (Continued)**

- rust inhibitors or antirust products, as they may not be compatible with the radiator engine coolant and may plug the radiator.
- This vehicle has not been designed for use with propylene glycol-based engine coolant (antifreeze). Use of propylene glycol-based engine coolant (antifreeze) is not recommended.

**Adding Coolant**

Your vehicle has been built with an improved engine coolant (OAT coolant conforming to MS.90032) that allows extended maintenance intervals. This engine coolant (antifreeze) can be used up to ten years or 150,000 miles (240,000 km) before replacement. To prevent reducing this extended maintenance period, it is important that you use the same engine coolant (OAT coolant conforming to MS.90032) throughout the life of your vehicle.

*(Continued)*

Please review these recommendations for using Organic Additive Technology (OAT) engine coolant (antifreeze) that meets the requirements of FCA Material Standard MS.90032. When adding engine coolant (antifreeze):

- We recommend using MOPAR® Antifreeze/Coolant 10 Year/150,000 Mile Formula OAT (Organic Additive Technology) that meets the requirements of FCA Material Standard MS.90032.
- Mix a minimum solution of 50% OAT engine coolant that meets the requirements of FCA Material Standard MS.90032 and distilled water. Use higher concentrations (not to exceed 70%) if temperatures below  $-34^{\circ}\text{F}$  ( $-37^{\circ}\text{C}$ ) are anticipated.
- Use only high purity water such as distilled or deionized water when mixing the water/engine coolant (antifreeze) solution. The use of lower quality water will reduce the amount of corrosion protection in the engine cooling system.

Please note that it is the owner's responsibility to maintain the proper level of protection against freezing according to the temperatures occurring in the area where the vehicle is operated.

**NOTE:**

- Some vehicles require special tools to add coolant properly. Failure to fill these systems properly could lead to severe internal engine damage. If any coolant is needed to be added to the system please contact your local authorized dealer.
- Mixing engine coolant (antifreeze) types is not recommended and can result in cooling system damage. If HOAT and OAT coolant are mixed in an emergency, have a authorized dealer drain, flush, and refill with OAT coolant (conforming to MS.90032) as soon as possible.

## Cooling System Pressure Cap

The cap must be fully tightened to prevent loss of engine coolant (antifreeze), and to ensure that the engine coolant (antifreeze) will return to the radiator from the coolant expansion bottle.

The cap should be inspected and cleaned if there is any accumulation of foreign material on the sealing surfaces.

### WARNING!

- The warning words "DO NOT OPEN HOT" on the cooling system pressure cap are a safety precaution. Never add engine coolant (antifreeze) when the engine is overheated. Do not loosen or remove the cap to cool an overheated engine. Heat causes pressure to build up in the cooling system. To prevent scalding or injury, do not remove the pressure cap while the system is hot or under pressure.

### WARNING! (Continued)

- Do not use a pressure cap other than the one specified for your vehicle. Personal injury or engine damage may result.

## Disposal Of Used Engine Coolant

Used ethylene glycol-based engine coolant (antifreeze) is a regulated substance requiring proper disposal. Check with your local authorities to determine the disposal rules for your community. To prevent ingestion by animals or children, do not store ethylene glycol-based engine coolant (antifreeze) in open containers or allow it to remain in puddles on the ground. If ingested by a child or pet, seek emergency assistance immediately. Clean up any ground spills immediately.

(Continued)

## Points To Remember

**NOTE:** When the vehicle is stopped after a few miles/kilometers of operation, you may observe vapor coming from the front of the engine compartment. This is normally a result of moisture from rain, snow, or high humidity accumulating on the radiator and being vaporized when the thermostat opens, allowing hot engine coolant (antifreeze) to enter the radiator.

If an examination of your engine compartment shows no evidence of radiator or hose leaks, the vehicle may be safely driven. The vapor will soon dissipate.

- Do not overfill the coolant expansion bottle.
- Check the coolant freeze point in the radiator and in the coolant expansion bottle. If engine coolant (antifreeze) needs to be added, the contents of the coolant expansion bottle must also be protected against freezing.
- If frequent engine coolant (antifreeze) additions are required, the cooling system should be pressure tested for leaks.
- Maintain engine coolant (antifreeze) concentration at a minimum of 50% OAT coolant (conforming to MS-12106) and distilled water for proper corrosion protection of your engine which contains aluminum components.
- Make sure that the coolant expansion bottle overflow hoses are not kinked or obstructed.
- Keep the front of the radiator clean. If your vehicle is equipped with air conditioning, keep the front of the condenser clean.
- Do not change the thermostat for Summer or Winter operation. If replacement is ever necessary, install ONLY the correct type thermostat. Other designs may result in unsatisfactory engine coolant (antifreeze) performance, poor gas mileage, and increased emissions.

## Charge Air Cooler – Inter-Cooler

The charge air cooler is positioned below the radiator and the air conditioner condenser. Air enters the engine through the air cleaner and passes through the turbo-charger, where it is pressurized. This pressurized air rapidly reaches high temperature. The air is then directed through a hose to the charge air cooler and through another hose to the intake manifold of the engine. The air entering the engine has been cooled by about 50° to 100°F (10° to 38°C). This cooling process enables more efficient burning of fuel resulting in fewer emissions.

To guarantee optimum performance of the system, keep the surfaces of the charge air cooler, condenser and radiator clean and free of debris. Periodically check the hoses leading to and from the charge air cooler for cracks or loose clamps resulting in loss of pressure and reduced engine performance.

## Brake System

### Brake Master Cylinder – Brake Fluid Level Check

The fluid level of the master cylinder should be checked when performing under the hood service, or immediately if the “Brake System Warning Light” indicates system failure.

The brake master cylinder has a translucent plastic reservoir. On the outboard side of the reservoir, there is a “MAX” mark and an “MIN” mark. The fluid level must be kept within these two marks. Do not add fluid above the full mark because leakage may occur at the cap.

With disc brakes, the fluid level can be expected to fall as the brake linings wear. However, an unexpected drop in fluid level may be caused by a leak and a system check should be conducted.



Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for further information.

### **WARNING!**

- Use only manufacturer’s recommended brake fluid. Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for further information. Using the wrong type of brake fluid can severely damage your brake system and/or impair its performance. The proper type of brake fluid for your vehicle is also identified on the original factory installed hydraulic master cylinder reservoir.
- To avoid contamination from foreign matter or moisture, use only new brake fluid or fluid that has been in a tightly closed container. Keep the master cylinder reservoir cap secured at all times. Brake

*(Continued)*

### **WARNING! (Continued)**

- fluid in a open container absorbs moisture from the air resulting in a lower boiling point. This may cause it to boil unexpectedly during hard or prolonged braking, resulting in sudden brake failure. This could result in an accident.
- Overfilling the brake fluid reservoir can result in spilling brake fluid on hot engine parts, causing the brake fluid to catch fire. Brake fluid can also damage painted and vinyl surfaces, care should be taken to avoid its contact with these surfaces.
  - Do not allow petroleum based fluid to contaminate the brake fluid. Brake seal components could be damaged, causing partial or complete brake failure. This could result in an accident.

## Clutch Hydraulic System

The clutch hydraulic system is a sealed maintenance-free system. In the event of leakage or other malfunction, the system must be replaced.

## Transfer Case – If Equipped

### Drain And Refill

Refer to the “Maintenance Schedule” for the proper maintenance intervals.

### Selection of Lubricant

Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for fluid specifications.

### Fluid Level Check

This fluid level can be checked by removing the filler plug. The fluid level should be to the bottom edge of the filler plug hole with the vehicle in a level position.

## Manual Transmission – If Equipped

### Selection of Lubricant

Refer to “Fluids, Lubricants, and Genuine Parts” in “Maintaining Your Vehicle” for fluid specifications.

### Fluid Level Check

The fluid level can be checked by removing the filler plug. If the level of the lubricant is more than 1/2 in (12 mm) below the bottom of the filler hole while the vehicle is on level ground, enough lubricant should be added to bring the level to 1/4 in (6 mm) below the bottom of the filler hole.

## Automatic Transmission – If Equipped

### Selection of Lubricant

It is important to use the proper transmission fluid to ensure optimum transmission performance and life. Use only the manufacturer's specified transmission fluid. Refer to "Fluids, Lubricants, and Genuine Parts" in this section for fluid specifications. It is important to maintain the transmission fluid at the correct level using the recommended fluid.

No chemical flushes should be used in any transmission; only the approved lubricant should be used.

#### **CAUTION!**

Recommended fluid may cause deterioration in transmission shift quality, and will require more frequent fluid and filter changes. Refer to "Fluids, Lubricants, and Genuine Parts" in this section for fluid specifications.

### Special Additives

The manufacturer strongly recommends against using any special additives in the transmission. Automatic Transmission Fluid (ATF) is an engineered product and its performance may be impaired by supplemental additives. Therefore, do not add any fluid additives to the transmission. The only exception to this policy is the use of special dyes for diagnosing fluid leaks. Avoid using transmission sealers as they may adversely affect seals.

#### **CAUTION!**

Do not use chemical flushes in your transmission as the chemicals can damage your transmission components. Such damage is not covered by the New Vehicle Limited Warranty.

## Fluid Level Check

It is best to check the fluid level when the transmission is at normal operating temperature (170-180°F / 77-82°C for 68RFE transmission, or 158-176°F / 70-80°C for AS69RC transmission). This normally occurs after at least 15 miles (25 km) of driving. At normal operating temperature the fluid cannot be held comfortably between the fingertips. You can read the transmission sump temperature in the EVIC display (see Electronic Vehicle Information Center [EVIC] for further information).

Use the following procedure to check the transmission fluid level properly:

1. Monitor the transmission temperature using the EVIC display, and operate the vehicle as required to reach the normal operating temperature.
2. Park the vehicle on level ground.
3. Run the engine at normal idle speed for at least 60 seconds, and leave the engine running for the rest of this procedure.
4. Fully apply the parking brake and press the brake pedal.
5. Place the shift lever momentarily into each gear position (allowing time for the transmission to fully engage in each position), ending with the transmission in PARK.
6. Remove the dipstick, wipe it clean and reinsert it until seated.
7. Remove the dipstick again and note the fluid level on both sides. The fluid level reading is only valid if there is a solid coating of oil on both sides of the dipstick. Note that the holes in the dipstick will be full of fluid if the actual level is at or above the hole. The fluid level should be between the "HOT" (upper) reference holes

on the dipstick at normal operating temperature. If the fluid level is low, add fluid through the dipstick tube to bring it to the proper level. **Do not overfill.** Use **ONLY** the recommended fluid (see "Fluids, Lubricants, and Genuine Parts" for fluid specifications). After adding any quantity of oil through the dipstick tube, wait a minimum of two minutes for the oil to fully drain into the transmission before rechecking the fluid level.

**NOTE:** If it is necessary to check the transmission **below** the operating temperature, the fluid level should be between the two "COLD" (lower) holes on the dipstick with the fluid at 60-70°F / 16-21°C for 68RFE transmission, or 68-86°F / 20-30°C for AS69RC transmission. Only use the COLD region of the dipstick as a rough reference when setting the fluid level after a transmission service or fluid change. Re-check the fluid level, and adjust as required, once the transmission reaches normal operating temperature.

### CAUTION!

**If the fluid temperature is below 50°F (10°C) it may not register on the dipstick. Do not add fluid until the temperature is elevated enough to produce an accurate reading. Run the engine at idle, in PARK, to warm the fluid.**

8. Check for leaks. Release the parking brake.

**NOTE:** To prevent dirt and water from entering the transmission after checking or replenishing fluid, make sure that the dipstick cap is properly reseated. It is normal for the dipstick cap to spring back slightly from its fully seated position, as long as its seal remains engaged in the dipstick tube.

## Fluid And Filter Change

Refer to the “Maintenance Schedule” for the proper maintenance intervals.

In addition, change the fluid and filter(s) if the fluid becomes contaminated (with water, etc.), or if the transmission is disassembled for any reason.

## Noise Control System Required Maintenance & Warranty

All vehicles built over 10,000 lbs. (4 535 kg) Gross Vehicle Weight Rating and manufactured for sale and use in the United States are required to comply with the Federal Government’s Exterior Noise Regulations. These vehicles can be identified by the Noise Emission Control Label located in the operator’s compartment.

**Vehicle Noise Emission Control Information**  
**Date of Vehicle Manufacture**

**This vehicle conforms to U.S. EPA regulations for noise emission applicable to medium and heavy duty trucks.**

**The following acts or the causing thereof by any person are prohibited by the Noise Control Act of 1972:**  
**(A) the removal or rendering inoperative, other than for purposes of maintenance, repair, or replacement, of any noise control device or element of design (listed in the Owner's Manual) incorporated into this vehicle in compliance with the Noise Control Act (B) the use of this vehicle after such device or element of design has been removed or rendered inoperative.**

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### Required Maintenance For Noise Control Systems

The following maintenance services must be performed every six months or 7,500 miles (12 000 km) whichever comes first, to assure proper operation of the noise control systems. In addition, inspection and service should be performed anytime a malfunction is observed or suspected. Proper maintenance of the entire vehicle will help the effectiveness of the noise control systems.

## Exhaust System

Inspect the entire exhaust system for leaks and damaged parts. Devices such as hangers, clamps, and U-bolts should be tight and in good condition. Damaged components, burned or blown out mufflers, burned or rusted out exhaust pipes should be replaced according to the procedures and specifications outlined in the appropriate service manual.

## Air Cleaner Assembly

Inspect air cleaner housing for proper assembly and fit. Make certain that the air cleaner is properly positioned and that the cover is tight. Check all hoses leading to the air cleaner for tightness. The air filter element must also be clean and serviced according to the instructions outlined in the Maintenance Schedule section of this manual.

## Tampering With Noise Control System Prohibited

Federal law prohibits the following acts or the causing thereof: (1) the removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below.

### AIR CLEANER

- Removal of the air cleaner.
- Removal of the air cleaner filter element from the air cleaner housing.
- Removal of the air ducting.

## EXHAUST SYSTEM

- Removal or rendering inoperative exhaust system components including the muffler or tailpipe.

## ENGINE COOLING SYSTEM

- Removal or rendering inoperative the fan clutch.
- Removal of the fan shroud.

## Noise Emission Warranty

The manufacturer warrants that this vehicle as manufactured by the manufacturer, was designed, built and equipped to conform at the time it left the manufacturer's control with all applicable U.S. EPA Noise Control Regulations.

This warranty covers this vehicle as designed, built and equipped by the manufacturer, and is not limited to any particular part, component or system of the vehicle manufactured by the manufacturer. Defects in design, assembly or in any part, component or system of the vehicle as manufactured by the manufacturer, which, at the time it left the manufacturer's control, caused noise emissions to exceed Federal standards, are covered by this warranty for the life of the vehicle.



**Maintenance Log and Service Chart (Diesel Engines)**

**Noise Systems Maintenance Chart and Service Log — Insert Month, Day, Year under column mileage closest to the mileage at which service was performed.**

MILES	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000
KILOMETERS	12 000	24 000	36 000	48 000	60 000	72 000	84 000	96 000
Exhaust system-inspect								
Air cleaner assembly-inspect								
ODOMETER READING								
PERFORMED BY								
PERFORMED AT								



## FLUID CAPACITIES

	U.S.	Metric
<b>Fuel (Approximate)</b>		
2500/3500 Shortbed Models	31 Gallons	129 Liters
2500/3500 Longbed Models	32 Gallons	132 Liters
Standard Rear Tank – Chassis Cab Only	52 Gallons	197 Liters
Optional Midship Tank – Chassis Cab Only	22 Gallons	83 Liters
Diesel Exhaust Fluid Tank (Approximate) – 2500/3500 Models	5.5 Gallons	21 Liters
Diesel Exhaust Fluid Tank (Approximate) – Chassis Cab	9 Gallons	34 Liters
<b>Engine Oil With Filter</b>		
6.7L Turbo Diesel Engine	12 Quarts	11.4 Liters
<b>Cooling System</b>		
6.7L Turbo Diesel Engine (MOPAR® Engine Coolant/Antifreeze 10 Year/150,000 Mile Formula)	5.7 Gallons	21.4 Liters

## FLUIDS, LUBRICANTS AND GENUINE PARTS

### Engine

Component	Fluid, Lubricant, or Genuine Part
Engine Coolant	We recommend you use MOPAR Antifreeze/Coolant 10 Year/150,000 Mile Formula OAT (Organic Additive Technology).
Engine Oil	<p>In ambient temperatures above 0°F (-18°C), we recommend you use 15W-40 engine oil such as MOPAR, Shell Rotella and Shell Rimula that meets FCA US Material Standard MS-10902 and the API CJ-4 engine oil category is required. Products meeting Cummins CES 20081 may also be used. The identification of these engine oils is typically located on the back of the oil container.</p> <p>In ambient temperatures below 0°F (-18°C), we recommend you use 5W-40 <b>synthetic</b> engine oil such as MOPAR, Shell Rotella and Shell Rimula that meets FCA US Material Standard MS-10902 and the API CJ-4 engine oil category is required.</p>
Engine Oil Filter	We recommend you use MOPAR Engine Oil Filters.
Fuel Filters	We recommend you use MOPAR Fuel Filter. Must meet 3 micron rating. <b>Using a fuel filter that does not meet the manufacturers filtration and water separating requirements can severely impact fuel system life and reliability.</b>

Component	Fluid, Lubricant, or Genuine Part
Crankcase Ventilation Filter	We recommend you use MOPAR CCV Filter.
Fuel Selection	<p>Use good quality diesel fuel from a reputable supplier in your vehicle. Federal law requires that you must fuel this vehicle with Ultra Low Sulfur Highway Diesel fuel (15 ppm Sulfur maximum) and prohibits the use of Low Sulfur Highway Diesel fuel (500 ppm Sulfur maximum) to avoid damage to the emissions control system.</p> <p>For most year-round service, No. 2 diesel fuel meeting ASTM specification D-975 Grade S15 will provide good performance.</p> <p>If the vehicle is exposed to extreme cold (below 20°F or -7°C), or is required to operate at colder-than-normal conditions for prolonged periods, use climatized No. 2 diesel fuel or dilute the No. 2 diesel fuel with 50% No. 1 diesel fuel. This will provide better protection from fuel gelling or wax-plugging of the fuel filters.</p> <p><b>This vehicle is fully compatible with biodiesel blends up to 5% biodiesel meeting ASTM specification D-975.</b> Pickup models, and Chassis Cab models configured with optional B20 capability, are additionally compatible with 20% biodiesel meeting ASTM specification D-7467.</p>

Component	Fluid, Lubricant, or Genuine Part
Diesel Exhaust Fluid	MOPAR Diesel Exhaust Fluid (API Certified) (DEF) or equivalent that has been API Certified to the ISO 22241 standard. Use of fluids not API Certified to ISO 22241 may result in system damage. You can receive assistance in locating DEF in the United States by calling 866-RAM-INFO (866-726-4636). In Canada call 1-800-465-2001 (English) or 1-800-387-9983 (French).

## Chassis

Component	Fluid, Lubricant, or Genuine Part
Automatic Transmission – If Equipped (Six-Speed 68RFE) – Pickup models without PTO	We recommend you use MOPAR® ATF+4® Automatic Transmission Fluid or equivalent licensed ATF+4® product. Failure to use ATF+4® fluid may affect the function or performance of your transmission.
Automatic Transmission – If Equipped (Six-Speed AS69RC) – Pickup models with PTO, and all Chassis Cab models	We recommend you use MOPAR® ASRC Automatic Transmission Fluid or equivalent. Failure to use the proper fluid may affect the function or performance of your transmission.
Transfer Case	We recommend you use MOPAR® BW44–44 Transfer Case Fluid.
Front and Rear Axle Fluid (2500/3500)	We recommend you use Synthetic, GL-5 SAE, 75W-90. Limited-Slip 10.5/11.5 inch Rear Axles Limited slip additive is not required.
Front and Rear Axle Fluid (4500/5500)	We recommend you use GL-5 SAE 75W-90 Synthetic (MS-9763).
Clutch Linkage	We recommend you use MOPAR® Multi-Purpose Grease, NLGI Grade 2 E.P. or equivalent.
Manual Transmission (G-56) – If Equipped	We recommend you use MOPAR® ATF+4® Automatic Transmission Fluid or equivalent licensed ATF+4® product.





# MAINTENANCE SCHEDULE

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**MAINTENANCE SCHEDULE — DIESEL ENGINE****CAUTION!**

Failure to perform the required maintenance items may result in damage to the vehicle.

**At Each Stop For Fuel**

Check the engine oil level at least 30 minutes after a fully warmed engine is shut off. Checking the oil level while the vehicle is on level ground will improve the accuracy of the oil level reading. Add oil only when the level is at or below the ADD or MIN mark.

**Once A Month**

- Inspect the batteries, and clean and tighten the terminals as required.

- Check the fluid levels of the coolant reservoir, brake master cylinder, and automatic transmission (if equipped), and add as needed.

**At Each Oil Change**

- Change the engine oil filter.
- Inspect the exhaust system.
- Inspect engine air filter.
- Check the coolant level, hoses, and clamps.
- Lubricate outer tie rod ends.

Inspection and service should also be performed anytime a malfunction is observed or suspected. Retain all receipts.

## Oil Change Indicator System – Cummins® Diesel

Your vehicle is equipped with an engine oil change indicator system. This system will alert you when it is time to change your engine oil by displaying the words “Oil Change Due” on your Electronic Vehicle Information Center (EVIC). The engine oil change indicator system is duty cycle based, which means the engine oil change interval may fluctuate depending on your personal driving style. Driving styles such as frequent stop and go type driving or extended idle time can increase the frequency of the engine oil change. This is the result of more frequent regeneration of the exhaust after treatment system, which can decrease the life of the engine oil. Failure to change the engine oil per the maintenance schedule can result in internal engine damage.

For information on resetting the Oil Change Indicator message, refer to “Oil Change Due” under “Electronic Vehicle Information Center (EVIC)/EVIC Warning Lights” in “Understanding Your Instrument Panel” for further information.

**Replace the engine oil and oil filter every 15,000 miles (24 000 km) or six months, or sooner if prompted by the oil change indicator system. Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months, whichever comes first.**

### NOTE:

- **Under no circumstances should oil change intervals exceed 15,000 miles (24,000 km) or six months or 500 Hours, whichever comes first.**
- Replace the engine oil and oil filter every 12,500 miles (20 000 km) when running B20 fuel (Chassis Cab Only).

If Chassis Cab models are operated with greater than 5% levels of Biodiesel, the oil change interval must not exceed 12,500 miles (20 000 km) under any circumstances. See the Fuel Requirements section for more information regarding operation of Chassis Cab models configured for use with Biodiesel blend(B6-B20) fuel meeting ASTM specification D-7467.

### **Perform Service Indicator – Cummins® Diesel**

Your vehicle will require emissions maintenance at a set interval. To help remind you when this maintenance is due, the Electronic Vehicle Information Center (EVIC) will display “Perform Service”. When the “Perform Service” message is displayed on the EVIC it is necessary to have the emissions maintenance performed. Emissions maintenance may include replacing the Closed Crankcase Ventilation (CCV) filter element. The procedure for clearing and resetting the “Perform Service” indicator message is located in the appropriate Service Information.

**Maintenance Chart — Cummins Diesel Engine**

Mileage or time passed (whichever comes first):	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	67,500	75,000	82,500	90,000	97,500	105,000	112,500	120,000	127,500	135,000	142,500	150,000	
Or Months:	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	
Or Kilometers:	12,000	24,000	36,000	48,000	60,000	72,000	84,000	96,000	108,000	120,000	132,000	144,000	156,000	168,000	180,000	192,000	204,000	216,000	228,000	240,000	
Change engine oil every 15,000 miles (24 000 km) or six months or 500 Hours or sooner if prompted by the oil change indicator system, whichever comes first. **	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
<b>Additional Inspections</b>																					
Check the Diesel Exhaust Fluid (DEF) tank, refill if necessary.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Rotate the tires.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	



Mileage or time passed (whichever comes first):	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	67,500	75,000	82,500	90,000	97,500	105,000	112,500	120,000	127,500	135,000	142,500	150,000
Or Months:	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
Or Kilometers:	12,000	24,000	36,000	48,000	60,000	72,000	84,000	96,000	108,000	120,000	132,000	144,000	156,000	168,000	180,000	192,000	204,000	216,000	228,000	240,000
Inspect drive belt; replace as necessary.			X			X			X			X			X			X		
Inspect wheel bearings.				X				X				X				X				X
<b>Additional Maintenance</b>																				
Replace engine fuel filter element.		X		X		X		X		X		X		X		X		X		X
Replace chassis mounted fuel filter element.		X		X		X		X		X		X		X		X		X		X
Inspect the front and rear axle surfaces. If gear oil leakage is suspected, check the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid. *																				

## 158 MAINTENANCE SCHEDULE

Mileage or time passed (whichever comes first):	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	67,500	75,000	82,500	90,000	97,500	105,000	112,500	120,000	127,500	135,000	142,500	150,000	
Or Months:	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	
Or Kilometers:	12,000	24,000	36,000	48,000	60,000	72,000	84,000	96,000	108,000	120,000	132,000	144,000	156,000	168,000	180,000	192,000	204,000	216,000	228,000	240,000	
Inspect the transfer case fluid (4x4), change for any of the following: police, taxi, fleet, or frequent trailer towing.				X				X				X				X					X
Change the transfer case fluid (4x4).								X								X					
Change automatic transmission fluid (AS69RC transmission only).				X				X				X				X					X
Change the automatic transmission fluid and sump filter (AS69RC transmission only).								X								X					



Mileage or time passed (whichever comes first):	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	67,500	75,000	82,500	90,000	97,500	105,000	112,500	120,000	127,500	135,000	142,500	150,000
Or Months:	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
Or Kilometers:	12,000	24,000	36,000	48,000	60,000	72,000	84,000	96,000	108,000	120,000	132,000	144,000	156,000	168,000	180,000	192,000	204,000	216,000	228,000	240,000
Change automatic transmission fluid and filter(s) if using your vehicle for any of the following: police, fleet, or frequent trailer towing (68RFE transmission only).								X								X				
Change automatic transmission fluid and filter(s).																X				
Change the manual transmission fluid if using your vehicle for any of the following: police, fleet, or frequent trailer towing.								X								X				
Replace Crankcase Ventilation Filter (CCV).									X									X		

Mileage or time passed (whichever comes first):	7,500	15,000	22,500	30,000	37,500	45,000	52,500	60,000	67,500	75,000	82,500	90,000	97,500	105,000	112,500	120,000	127,500	135,000	142,500	150,000	
Or Months:	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	
Or Kilometers:	12,000	24,000	36,000	48,000	60,000	72,000	84,000	96,000	108,000	120,000	132,000	144,000	156,000	168,000	180,000	192,000	204,000	216,000	228,000	240,000	
Flush and replace power steering fluid.													X								
Flush and replace engine coolant. ***																					X
Adjust valve lash clearance.																					X

Inspection and service should also be performed anytime a malfunction is observed or suspected. Retain all receipts.

\* Inspect the front and rear axle surfaces every 20,000 miles (32,000 km). If gear oil leakage is suspected, check

the fluid level. If using your vehicle for police, taxi, fleet, off-road or frequent trailer towing change the axle fluid every 20,000 miles (32,000 km).

\*\* Under no circumstances should oil change intervals exceed 15,000 miles (24 000 km) or six months or 500 Hours, whichever comes first.

\*\*\*\* Under no circumstances should the air cleaner filter element exceed 30,000 miles (48,000 km) or 24 months, whichever comes first.

**CAUTION!**

\*\*\*The manufacturer highly recommends that all cooling system service, maintenance, and repairs be performed by your local authorized dealer.

**WARNING!**

- You can be badly injured working on or around a motor vehicle. Do only service work for which you have the knowledge and the right equipment. If you have any doubt about your ability to perform a service job, take your vehicle to a competent mechanic.

*(Continued)*

**WARNING! (Continued)**

- Failure to properly inspect and maintain your vehicle could result in a component malfunction and affect vehicle handling and performance. This could cause an accident.



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## **INSTALLATION OF RADIO TRANSMITTING EQUIPMENT**

Special design considerations are incorporated into this vehicle's electronic system to provide immunity to radio frequency signals. Mobile two-way radios and telephone equipment must be installed properly by trained personnel. The following must be observed during installation.

The positive power connection should be made directly to the battery and fused as close to the battery as possible. The negative power connection should be made to body sheet metal adjacent to the negative battery connection. This connection should not be fused.

Antennas for two-way radios should be mounted on the roof or the rear area of the vehicle. Care should be used in mounting antennas with magnet bases. Magnets may affect the accuracy or operation of the compass on vehicles so equipped.

The antenna cable should be as short as practical and routed away from the vehicle wiring when possible. Use only fully shielded coaxial cable.

Carefully match the antenna and cable to the radio to ensure a low Standing Wave Ratio (SWR).

Mobile radio equipment with output power greater than normal may require special precautions.

All installations should be checked for possible interference between the communications equipment and the vehicle's electronic systems.



STICK WITH THE SPECIALISTS®

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