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## Introduction

### INFORMATION ABOUT THIS GUIDE

The information found in this guide was in effect at the time of printing. Ford may change the contents without notice and without incurring obligation.

### WELCOME TO THE ELECTRIC CARRIER ROUTE VEHICLE (ECRV)

Your vehicle is very similar to the gas-powered LLV in appearance. This vehicle was built to be transparent from the gas-powered LLV. There are enough differences that you should read this manual. Operation is the same, but some functions are different. The regular LLV owner's manual covers common systems. This **Owner's Guide** contains the information specific to your vehicle.

### ICONS

The warning icon. Read the following section on *Warnings* for a full explanation.



Indicates vehicle information related to recycling and other environmental concerns will follow.



Correct vehicle usage and the authorized disposal of waste cleaning and lubrication materials are significant steps towards protecting the environment.

Indicates that this Owner Guide contains information on this subject. Please refer to the Index to locate the appropriate section which will provide you more information.



### WARNINGS


Provide information which may reduce the risk of personal injury or prevent possible damage to others, your vehicle and its equipment.

### SPECIAL NOTICES













Before you drive your vehicle, please read this Owner's Guide carefully. Your vehicle is not a passenger car. As with other vehicles of this type,

## Introduction

failure to operate this vehicle correctly may result in loss of control or an accident.

 Do not use this vehicle as an ambulance.

These are some of the symbols you may see on your vehicle.

Safety Alert		See Owner's Guide	
Brake System		Anti-Lock Brake System	
Hazard Warning Flasher		Windshield Wash/Wipe	
Preheat		Low Oil Pressure	
Motor Coolant		Engine Coolant Temperature	
Power Steering Fluid		Maintain Correct Fluid Level	

## Instrumentation

### WARNING LIGHTS AND CHIMES

#### Service indicator lamp

The service indicator lamp indicates that a vehicle malfunction has occurred. The vehicle should be taken to a vehicle maintenance facility for service.



#### Brake warning lamp

The brake warning lamp illuminates when there is a regenerative braking system malfunction, low fluid level in the master cylinder or low fluid pressure in the hydraulic lines, or when the parking brake is engaged. If the lamp remains illuminated after the parking brake is fully released and the master cylinder is full, the vehicle should be taken to a vehicle maintenance facility.



#### Charging lamp

The charging lamp illuminates when the key is turned to the ON or START position while the vehicle is connected to the power control station (PCS). If the lamp flashes when the key is in the ON position, there is a vehicle malfunction and the drive battery cannot be charged. Confirm the vehicle is in park and the PCS cord is properly attached. If the vehicle is in P (Park) and the PCS cord is properly connected and the charging lamp continues to flash, then the vehicle should be taken to a vehicle maintenance facility.



#### Low oil pressure lamp

The low oil pressure lamp indicates that the transaxle oil lubrication system is operating below the desired pressure. Oil cannot be added by the owner. The vehicle should be returned to a vehicle maintenance facility as soon as possible. Driving in excess of 50 miles to reach a vehicle maintenance facility may damage the transaxle.



## Instrumentation

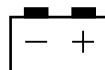
### Electrical hazard warning lamp

The electrical hazard warning lamp indicates a malfunction in the high-voltage system. The vehicle will not charge and must be taken to a vehicle maintenance facility immediately.



### Auxiliary battery lamp

The auxiliary battery lamp indicates there is an auxiliary battery charging malfunction. Take the vehicle to a vehicle maintenance facility immediately.



### Low fuel lamp

The low fuel lamp indicates that the vehicle's drive battery has reached a 10% state of charge. The vehicle must be placed on charge. The indicator will flash when the battery reaches a 0% state of charge.



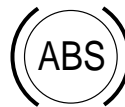
### Power limit lamp

The power limit lamp indicates a system fault or reduced vehicle performance to conserve remaining drive battery power. As the vehicle nears complete discharge, the power limit lamp will illuminate. High-voltage accessories ( heat) will be disabled. You will notice a decrease in vehicle performance and you must return to a PCS (power control station) immediately. The lamp will begin to flash and the performance of the vehicle will be severely limited. The vehicle will continue to operate until the drive battery is completely drained.



### Anti-lock brake system (ABS) lamp

The ABS lamp indicates that there is a malfunction with the ABS. If the light stays on or continues to flash after the vehicle is started, take the



## Instrumentation

vehicle to a vehicle maintenance facility for service.

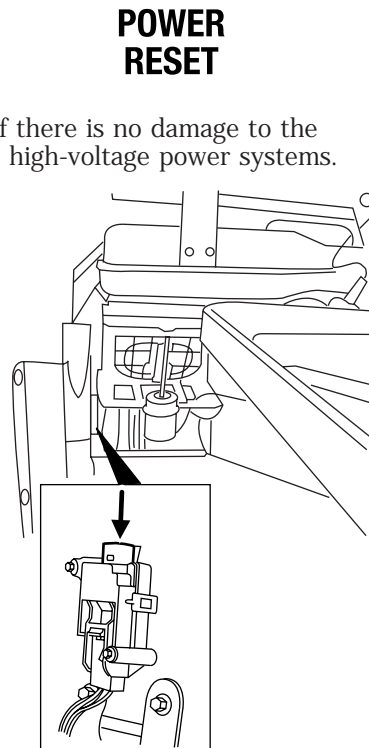
### Econ mode lamp

The econ mode lamp indicates that the gearshift is in the E (Economy) position. This mode is recommended for urban traffic and will improve range by increasing the effects of regenerative braking and limiting top speed to 50 mph (80 km/h). The D (Drive) position is recommended for highway operation at steady speeds.

### Power reset lamp

The power reset lamp indicates that the inertia shutoff switch has been tripped and all high-voltage power has been disconnected and power has been limited to the traction battery. If there is no damage to the vehicle, reset the switch to reactivate the high-voltage power systems.

The inertia shutoff switch is located under the dashboard to the far left near the heater box. If there is damage to the vehicle, have the vehicle towed to a vehicle maintenance facility.



## Instrumentation

### Turn signal

Illuminates when the left or right turn signal or the hazard lights are turned on. If one or both of the indicators stay on continuously or flash faster, check for a burned-out turn signal bulb. Refer to *Bulbs* in the *Maintenance and care* chapter.

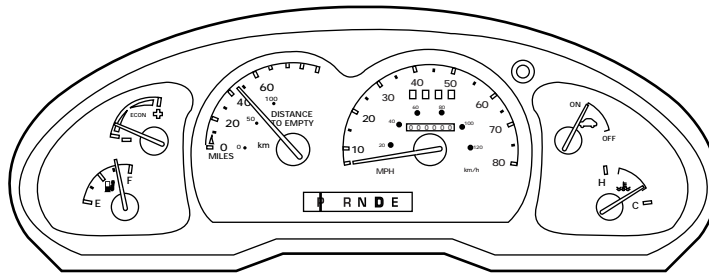


### High beams

Illuminates when the high beam headlamps are turned on.

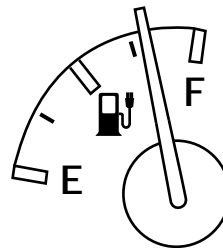


## GAUGES



### Battery state of charge gauge

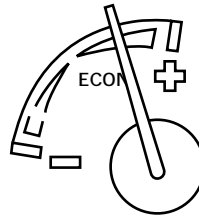
The battery state of charge gauge is the equivalent of a fuel gauge on a gasoline-powered vehicle. F (Full) indicates that the battery is completely charged. E (Empty) indicates the battery has been discharged to the point where additional operation will damage vehicle systems.



## Instrumentation

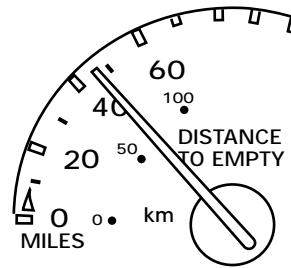
### Economy gauge

The economy gauge provides information about the vehicle's energy usage. Economical usage of the vehicle is indicated by the gauge reading near the plus (+) side and will maximize the vehicle's range.



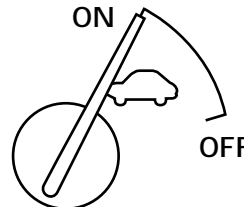
### Distance to empty gauge

The distance to empty gauge estimates the remaining distance the vehicle can travel before requiring a drive battery recharge. The gauge reading is based on remaining drive battery energy, driving conditions and recent vehicle usage.



### Motor enabled gauge

The motor enabled gauge indicates that the vehicle is ready to drive. Turning the ignition switch to the full START position and releasing will turn the vehicle on, and the gauge will move to the ON position.

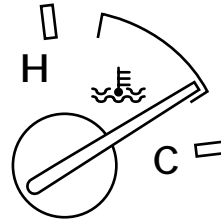


## Instrumentation

### Temperature gauge

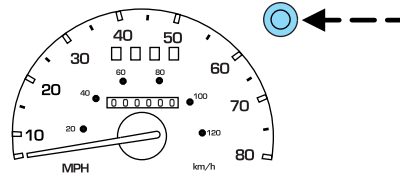
The temperature gauge indicates the temperature of the vehicle's components. Unlike conventional temperature gauges, it does not start cold and move to normal. The gauge sits at normal and moves to hot or cold when there is a problem.

If the gauge moves to H (Hot), vehicle performance will be limited until the coolant temperature or drive battery temperature returns to normal. The vehicle should be stopped and plugged into a PCS until it has cooled down. The vehicle may need servicing. If the gauge moves to C (Cold), the vehicle may have an extended charge time and a reduced driving range.



### Trip odometer

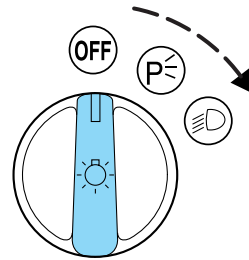
Registers the kilometers (miles) of individual journeys. To reset, depress the control.



## Controls and features

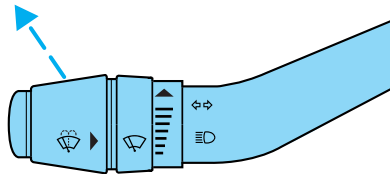
### HEADLAMP CONTROL

Rotate the headlamp control to the first position to turn on the parking lamps. Rotate to the second position to also turn on the headlamps.



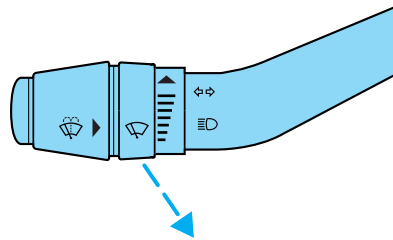
### High beams


Push forward to activate.  
Pull toward you to deactivate.



### Flash to pass

Pull toward you to activate and release to deactivate.



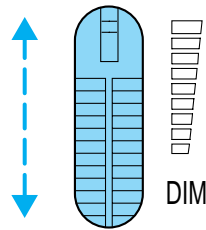
 Always remember to turn on your headlamps at dusk or during inclement weather. Failure to activate your headlamps under these conditions may result in a collision.

## Controls and features

### PANEL DIMMER CONTROL

Use to adjust the brightness of the instrument panel during headlamp and parklamp operation.

- Rotate up to brighten.
- Rotate down to dim.
- Rotate to full up position (past detent) to turn on interior lamps.
- Rotate to full down position (past detent) to turn off interior lamps.

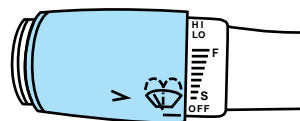


### WINDSHIELD WIPER/WASHER CONTROLS

Rotate the windshield wiper control to the desired interval, low or high speed position.

The bars of varying length are for intermittent wipers. When in this position rotate the control upward for fast intervals and downward for slow intervals.


Push (tap) the end of the stalk briefly for a single swipe (no wash). Push and hold for three swipes with wash. Push and hold for a longer wash (up to ten seconds).



### Doors

#### Side door latch

#### Outside

 To help reduce the risk of personal injury in an accident, always lock the doors (and rear roll-up door) when driving. Along with using the seat belts properly, locking the doors helps prevent people from being thrown from the vehicle. It also helps prevent unintended opening of the doors and helps keep out intruders.

The sliding doors will latch when fully open or fully closed. They can be locked with a key. To release the latch with the door in the fully closed

## Controls and features

position. swing the door handle toward the rear of the vehicle. To release the latch with the door in the fully open position, swing the door handle toward the front of the vehicle.

### **Inside**

To release the latch with the door in the fully closed position, swing the door handle toward the rear of the vehicle. To release the latch with the door in the fully open position, swing the door handle toward the front of the vehicle.

### **Cargo area/driver compartment partition door**

To open or close the partition door, unlock the lock, remove the key, and slide the door in the desired direction.

### **Cargo door**

To open the cargo door, unlock the latch with the key, and pull the latch outward. Lift the door upward by using the handhold provided to the left of the latch.

To close the cargo door, pull the door down by using the strap provided inside the door opening. Lock the latch with the key.



Never drive the ECRV while any of its doors are either fully or partially open.

### **Side door windows**

There are two side door windows which can be opened. Be sure to close all windows before leaving the vehicle. To open the window, crank the handle clockwise. To close the window, crank the handle counterclockwise.

### **Cargo area window**

A cargo bay window is provided to allow increased field of vision to the left of the vehicle. It is not adjustable. This window is made of Lexan which is more impact resistant than tempered safety glass. Additional care is required to maintain this window to help avoid scratches. Refer to *Cleaning the cargo area window* in the maintenance and care section of the owner's guide.

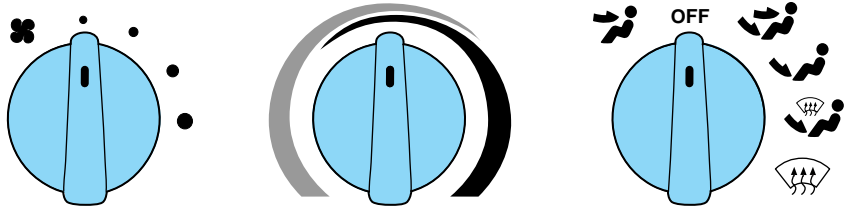
## Controls and features

### CLIMATE CONTROL SYSTEM

Your vehicle is equipped with an automatic temperature control (ATC) system designed to maintain a selected temperature.

#### Heater Controls

The control for your heater system is located to the left of the steering column on the instrument panel and will operate in the KEY-ON position. Your heater will heat your vehicle interior depending on the function position and temperature you select. The mode selector knob allows you to select where the heated air will be directed. The temperature control knob setting determines the desired interior temperature of the vehicle. To turn your heater system on, select any position except OFF. This will turn the fan on and allows air flow into the vehicle. To turn your heater system off, select OFF. This will turn the fan off and stop airflow from coming into the vehicle.



#### Recirculation switch




The recirculation switch is located to the left of the heater controls on the instrument panel. It allows switching from outside air to recirculated air in Panel,



Panel/Floor, and Floor modes. The recirculation switch operates for five minutes, then shuts off. If more recirculation operation is desired, press the control again. A table of recirculation switch operation follows.

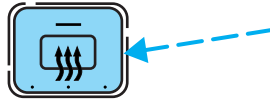
Recirculation Switch Operation		
Icon	Mode	Recirculation
	Panel	Selectable
OFF	OFF	Not Available
	Panel/Floor	Selectable

## Controls and features

<b>Recirculation Switch Operation</b>		
	Floor	Selectable
	Floor/Defrost	Not Available
	Defrost	Not Available

**Pre-heat switch**

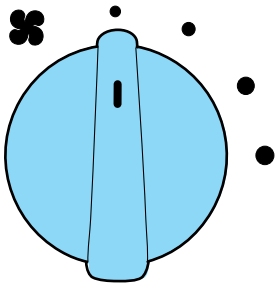
The switch for the pre-heat is located to the left of the heater controls, above the re-circulation button.



The pre-heat function allows for heating/defrosting while the vehicle is in the KEY-OFF position to help conserve battery energy. This feature will operate when the ECRV is connected to the charging station and the outside temperature is 64.4 °F (18 °C) or below. To activate, push the pre-heat button once. When activated, the lights on the instrument cluster will briefly illuminate. Heating is limited to 30 minutes of operation per activation. This function will automatically default the temperature control to full heat and set the fan speed. The fan speed is dependent on the temperature inside the vehicle. Direction of air flow can be controlled using the mode selector knob. While the pre-heat function is on, the vehicle will be in re-circulation mode. To turn the pre-heat off, disconnect the vehicle from the charging station, put the vehicle in the KEY-ON position, or wait until 30 minutes have passed.

**Fan speed knob**

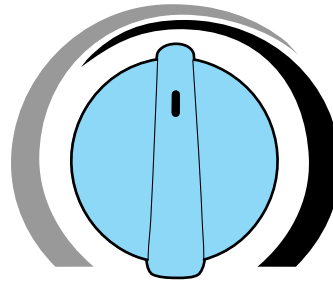
The left knob on the control is the fan control knob, which controls the volume of air flow. Rotate the knob to the right to increase fan speed and increase the amount of air entering the vehicle. Four fan speed positions are available and are indicated by dots beside the control knob. The largest dot is the high-speed position.



## Controls and features

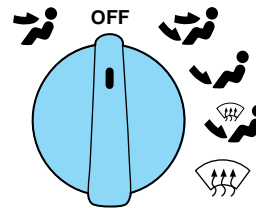
### Temperature control knob





The temperature control knob is the rotating knob located at the center of the control with tapered red and blue bands surrounding most of the knob. The wide red part of the band (full right) is the warm temperature area. The wide blue part of the band (full left) is the cool temperature area. Any position selected between full right and full left will give a temperature between maximum heating 84°F (29°C) and the outside temperature.




### Mode selector knob

The right knob on the control is the mode selector, which controls the direction of the airflow inside the vehicle.



-  (panel)-Select to distribute outside air or recirculated air through the instrument panel registers. The air may be heated based on temperature selection. The air cannot be cooled below the outside temperature regardless of the temperature setting.
-  (panel and floor)-Select to distribute outside air or recirculated air through the instrument panel registers and to the floor ducts at the same time. The air may be heated based on temperature selection. The air cannot be cooled below the outside temperature regardless of the temperature setting.
-  (floor)-Select to distribute outside air or recirculated air through the floor ducts. The air may be heated based on temperature selection. The air cannot be cooled below the outside temperature regardless of the temperature setting.
-  (floor and defrost)-Select to distribute outside air through the floor ducts and the windshield defroster ducts at the same time.

## Controls and features

-  (defrost)-Select to distribute outside air through the windshield defroster ducts. Defrost can be used to clear ice or fog from the windshield. The air may be heated and/or cooled based on temperature selection.

### **Operating tips**

- In humid weather, select defrost before driving. This prevents your windshield from fogging. After a few minutes of operation, you may select another function.
- Remove any snow, ice or leaves from the air intake area of your heater system that could block the air intake. The intake area is located at the bottom of the windshield.
- If temperatures below  $-18^{\circ}\text{C}$  ( $0^{\circ}\text{F}$ ), select recirculation before driving. This will help warm the vehicle interior and minimize degraded performance at low outside temperatures.
- The use of climate controls will reduce the vehicle's range. Limit the use of maximum heating of the vehicle interior.
- If the temperature is below  $64.4^{\circ}\text{F}$  ( $18^{\circ}\text{C}$ ) use the preheat function for up to 30 minutes before taking the vehicle off plug. Close the interior cargo door to make the cabin preheat more effective.

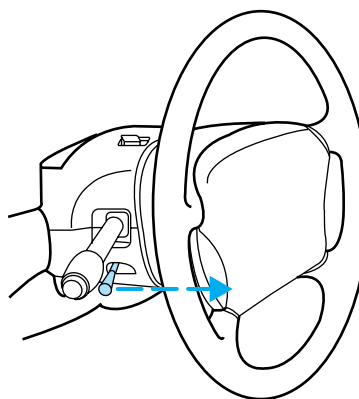
### **HAZARD FLASHER**

For information on the hazard flasher control, refer to *Hazard flasher* in the *Roadside emergencies* chapter.

## Controls and features

### TILT STEERING WHEEL (IF EQUIPPED)

Pull the tilt steering control toward you to move the steering wheel up or down. Hold the control while adjusting the wheel to the desired position, then release the control to lock the steering wheel in position.



Never adjust the steering wheel when the vehicle is moving.

### SUNVISOR

The sunvisor blocks glare not only from the windshield but also from the side door window. You can pivot the sunvisor to the desired position.

### SIDE VENTS

Two side vents are located in the vehicle's cargo area. To open the vent, rotate the handle in either direction. To close the vent, move the handle to the middle position.

### MIRRORS

There are seven outside mirrors, which should be adjusted before driving the vehicle. To adjust a mirror, grasp the outer edge of the mirror and slowly pull or push in the desired direction.

There are two flat side mirrors, which are located on either side of the vehicle and two convex side mirrors below the flat side mirrors. Additionally, there are two convex front crosswalk mirrors (pot lids) and one rear convex crosswalk mirror (pot lid). Start by adjusting the top driver's side mirror so you can see the side of the vehicle.

## Controls and features

All of the exterior mirrors, except for the top mirrors next to the side doors, are convex (pot lids). The surface of the convex mirror is curved to allow you to see more from the driver's seat, but it makes objects appear farther away than they really are.

Have someone assist you by adjusting the passenger side mirrors and all crosswalk mirrors. The passenger side mirrors and crosswalk mirrors aid you in seeing any obstructions behind, in front, and beside the vehicle before you begin moving.



The convex (pot lid) mirrors can make things appear farther away than they really are. Use care when utilizing these mirrors, especially when changing lanes and backing up.

### DRIVER COMFORT FAN AND SWITCH

The driver comfort fan switch is located on the upper right section of the instrument panel. The driver comfort fan is located on the top left side of the dash panel. The driver can select low or high fan speed and can adjust the fan to direct the air flow.

### CARGO LAMPS AND SWITCHES

The two-position cargo lamp switch is located on the upper right corner of the instrument panel. The switch controls the two overhead lights in the cargo compartment. An additional cargo lamp switch is located in the right rear corner of the cargo compartment. The cargo lamps can be turned on or off with either switch.


### SEATING


The driver's seat has two adjustment levers. Both are located on the bottom front of the seat. The lever on the right is for adjusting the fore-aft motion of the seat (distance between the driver and the steering wheel). The lever on the left is for adjusting the height of the seat.

#### Driver's seat height adjust

The driver's seat height adjustment lever is located on the left side bottom on the front of the seat. To raise the seat, slide the adjustment handle to the left, lift your weight so that the seat will rise to the desired height, and release the lever to lock.


## Controls and features

 Do not remove the side shields from the riser mechanism or adjust the riser height without the side shields in place. Except for moving the adjustment handle, do not put your fingers near the riser mechanism when adjusting the riser height.

 Each seating position in your vehicle has a specific safety belt assembly, which is made up of one buckle and one tongue that are designed to be used as a pair. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing it around your neck over the inside shoulder. 3) Never use a single belt for more than one person. Always drive with the lap belt snug and low across the hips.


### Seat fore-aft control

The seat fore-aft control is located on the right front side of the driver's seat. To adjust the seat forward or backward, pivot the control lever from left to right until the locking mechanism releases; then, move the seat to the desired position. Release the lever to lock the seat in position.

 Do not adjust the driver's seat while the vehicle is moving. The seat could move suddenly and cause the driver to lose control of the vehicle.

### Companion seat

The companion seat, if installed, is similar to the driver's seat, but has no adjustments. The companion seat can be mounted in either the cab (companion position) or the cargo compartment (observer position). Only a qualified service center should remove and/or install the companion seat.

 The companion seat passenger must wear the safety belt at all times when the vehicle is being operated.

## Controls and features

### SAFETY RESTRAINTS

#### SAFETY RESTRAINTS PRECAUTIONS



All occupants of the vehicle, including the driver, should always properly wear their safety belts.



**THIS VEHICLE IS NOT EQUIPPED WITH AN AIRBAG.** You must wear your safety belt at all times when operating the vehicle. Wear both lap and shoulder belts. Failure to wear both lap and shoulder belts will increase the risk of injury in a collision.



After inserting the latch plate, make sure that it is locked and that the belt is not twisted. A twisted belt can lead to serious injury because it reduces the amount of protection.



Never adjust the seat while the vehicle is moving. The sudden movement could cause you to lose control of the vehicle.



The companion seat passenger must wear the safety belt at all times when the vehicle is being operated. Although the companion seat can be removed from the vehicle, to preserve safety, only a qualified service center should remove and/or install the seat.



It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.



In a rollover crash, an unbelted person is significantly more likely to die than a person wearing a safety belt.

## Controls and features



Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing the safety belt around your neck over the inside shoulder. 3) Never use a single belt for more than one person.

### **THIS VEHICLE IS NOT EQUIPPED WITH AN AIR BAG!**

#### ***Safety belts introduction***

The driver and passenger must wear their safety belts at all times when the vehicle is moving. Failure to do so could increase the chance of injury and/or the severity of injury in accidents. Safety belts provide added protection in the event of sudden braking or a collision.

The driver and any passenger belt restraint systems incorporate webbed belts with inertia-sensitive retractors. The system is designed to lock (i.e., prevent belt travel) during very sudden stops or impacts. However, the driver's shoulder belt moves freely with the wearer under normal conditions. If the belt is jerked or pulled rapidly by hand, the belt may lock. If this occurs, let go of the belt, then pull out on it slowly and smoothly.

The driver's shoulder belt is detachable from the lap belt, and the shoulder belt. However, wearing **both** your lap and shoulder belts at all times is recommended. Failure to wear **both** belts will increase your risk of injury in a collision.

## Driver safety belt operation

The belt restraint for the driver is equipped with a retracting shoulder harness.

### BUCKLING THE BELT

Perform the following procedure when buckling the driver safety belt:

1. Enter the vehicle, and close the door.
2. Adjust the seat (see instruction for seat adjustment). Sit up straight and well back in the seat.
3. Grasp the latch plate, and slide it up the webbing, while pulling forward with a slow steady motion. You should pull out enough webbing to extend approximately one arm's length or enough to go across your lap. If the retractor should engage while you are doing this, let go of the belt, then pull out on it slowly and smoothly. Do **not** let the belt become twisted.
4. Pull the belt across your lap and push the latch plate into the buckle until it clicks. Pull on the belt to make sure it is secure.
5. Adjust the shoulder harness to fit your body. The recommended fit is to have the belt come over your right shoulder and down across your chest—not across your neck.

The shoulder belt allows unrestricted movement of the upper body under normal conditions, and it locks in the event of an accident.



After inserting the latch plate, make sure it is locked and the belt is not twisted. A twisted belt can lead to serious injury because it reduces the amount of protection.



Do not wear the shoulder belt under your arm or in any position other than the one described here. Such use could increase the chance of severe injury in an accident. The lap belt should be worn snug and low across the hips.

### DETACHING THE SHOULDER HARNESS

To detach the shoulder belt, detach the latch plate from the buckle of the shoulder belt harness by pressing the shoulder harness buckle release button. To reattach the belt, press the latch plate into the buckle until it locks in place.

## Driver safety belt operation



Wearing **both** your and shoulder belts at all times is recommended. Failure to wear both belts will increase your risk of injury in an accident.

### RELEASING THE BELT

1. Press the lap belt buckle release button and allow the belt to retract.
2. If the belt does not retract smoothly, pull it out and check for kinks or twists.

Inspect the belt system periodically. Check for cuts, frays and loose parts. Damaged parts must be replaced immediately. **Do not disassemble or modify the system.** Safety belt assemblies must be replaced if:

1. If they have been subjected to extreme stress by a wearer in an accident (even if no damage is obvious).
2. If they have been damaged by an accident (e.g. bent retractor, torn webbing).



If there is any question regarding belt or retractor condition, replace the assembly.

### COMPANION SEAT SAFETY BELT OPERATING INSTRUCTIONS

To engage the shoulder belts, loosen each belt until you can place your arms (l & r) between the belt (l & r) and the seat back. Bring each belt (l & r) forward until it passes in front of your shoulders (l & r) and pull each belt tight. To engage the lap belt, grasp the latch plate protruding from the belt retractor at the right of the seat, pull the belt across your lap, and insert the latch plate in the buckle at the left of the seat.

To release the lap belt, press the button on the lap belt buckle and allow the belt retractor to rewind the lap belt. To release the shoulder straps, loosen the straps until you can move them outward enough to leave the seat.

The companion seat safety belt should be used and maintained in the same manner as the driver's safety belt.

## **Driver safety belt operation**

### **Driver and companion safety belt inspection**

Now and then check that belts, buckles, latch plates, retractors, and guide loops work properly. Look for loose or damaged parts that could keep the restraint system from doing its job. Replace a belt if the webbing has been cut or damaged. Replace belts in the event of a collision. If there is any question replace the belt.

## Charging


### CHARGING

Charging your vehicle is a safe, simple process. **In-garage charging of this vehicle has received UL approval.** To maximize range, the vehicle should be connected to a power control station (PCS) whenever possible to keep the battery fully charged.


A conductive power control station (PCS) is required to recharge your vehicle. The PCS consists of a “smart” box and a connector and cable assembly that safely conducts AC power from the utility supply grid to the vehicle inlet (located at the right front of the vehicle, next to the right headlamp). An important feature of the PCS is an integrated control pilot circuit, which performs safety functions such as verifying the vehicle is present and safely connected, start/stop control, confirming the smart box is ready to send power, confirming the vehicle is ready to accept power, and continuously verifying the presence of an equipment ground. The PCS supplies the power commanded **by the vehicle.**


These stations will be located at designated post office and vehicle maintenance facility sites.

Consult your PCS owner’s manual for specific instruction on using your PCS. Additional installations or service requirements that you might need should be performed by a full service installer.

 Always follow charging instructions carefully. Failure to do so may result in vehicle damage, personal injury or death.

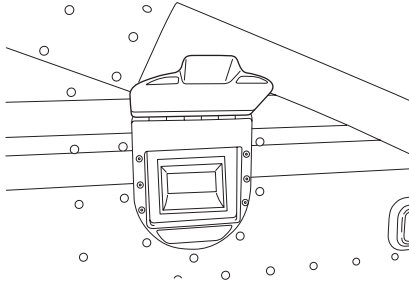
### To connect the PCS:

 Always set the parking brake fully. Make sure the gearshift lever is placed in P (Park) position. Turn off the “ignition” whenever you leave your vehicle.

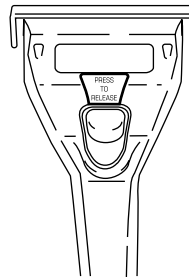
1. Park the vehicle. The vehicle’s charge inlet is on the right front fender.
2. Place the gearshift lever in P (Park) and set the parking brake. 
3. Turn the “ignition” to LOCK and remove the key from the “ignition.”

## Charging

4. Open the charge inlet access door on the right front fender. The door is hinged toward the hood and opens upward.

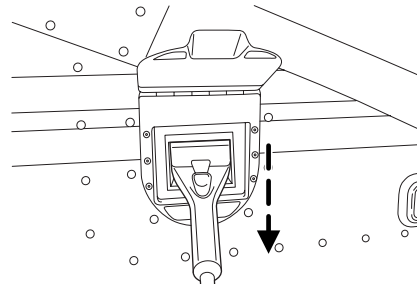


5. Pick up the PCS connector and position it so that the release button is facing upwards.



6. Align the PCS connector to the charge inlet, fully insert the connector and make sure that the tabs on both sides of the connector engage the slots in the inlet.

7. Gently push the connector down until you hear a click. The click means that the connector is locked into the inlet.



8. The time required to charge the vehicle depends on the battery temperature and the state of charge when the vehicle is plugged in. The normal charge time is 6-8 hours.

## Charging

### ***Estimated charge time***

The amount of time required to fully charge the battery pack varies depending upon the beginning state of charge and battery temperature. Note that battery temperature is not necessarily the same as outside temperature. The use of outside temperature to plan charge times, however, is the most straightforward approach.

Typically it will take 6–8 hours for the vehicle to fully charge from “empty” to “full.” Use the battery state of charge gauge as a guide to assess whether enough charge time was allowed. If the gauge does not indicate “full” when the “ignition” is moved to the ON position, one of the following may have happened:

- The battery pack may be too warm or too cold. Charge times can increase to 10 hours or more for warmer or cooler batteries. In severe temperature conditions (battery temperature less than 41°F [5°C], or greater than 140°F [60°C] for the lead-acid type) the vehicle will not charge at all.
- The PCS may be malfunctioning.
- The battery pack may be out of electrical balance. The vehicle will perform a balancing charge, which may take up to four hours for the lead-acid type over the normal charging time, and then indicate “full.”
- The gearshift lever was not in P (Park).
- The battery pack may be new. Vehicles that have experienced less than 10 drive/charge cycles need an additional few hours of charge time.

Refer to charging troubleshooting later in this section.

If none of the above apply, the vehicle should be returned to the PCS to attempt to complete charging or taken to your vehicle maintenance facility.

### **Lead-acid traction battery**

At 77°F (25°C), the drive battery can be charged to 80% capacity in about three hours; 100% capacity requires approximately six to eight hours. Completely charging the drive battery is important to ensure maximum range and battery life. Ford recommended practice is that the vehicle should always be left on-plug when not in use and be allowed to fully charge before driving.

Charge time may increase at colder or hotter temperatures. The drive battery must be above 41°F (5°C) and below 140°F (60°C) before

## Charging

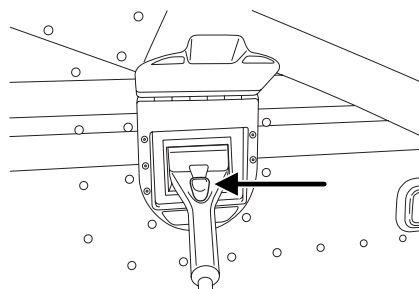
charging will begin. After being connected to a PCS, the vehicle will automatically heat or cool the drive battery, as needed. When the battery reaches the necessary temperature, charging will begin. Following a complete charge in colder climates, charging will continue at periodic intervals to maintain the battery at 14°F (-10°C).

**Your vehicle should be connected to a PCS whenever it is not being driven.**

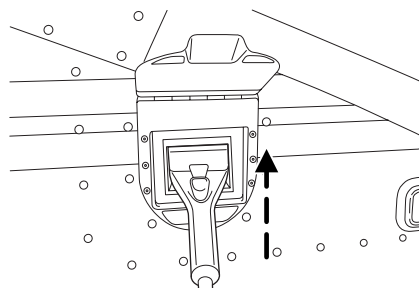
If a PCS is not available, the vehicle may be stored off-plug for up to 28 days without suffering permanent damage as long as the initial state of charge is greater than 50%. The frequency of this type of storage should be limited to a few occurrences over the life of the vehicle.

### To disconnect the PCS:

1. Grasp the charge connector and press the button in the center of the handle.

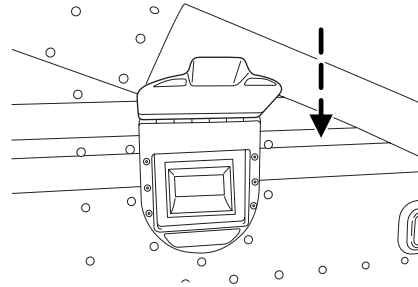


2. Pull the charge connector upward and pull it out of the inlet.

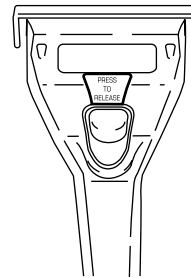


## Charging

3. Close the charge inlet access door on the right front fender.



4. Return the connector and cable to their proper location.



### **Charging troubleshooting**

If your vehicle fails to charge follow this procedure to determine if your Power Control Station (PCS) is operating properly:

1. Make note of any lights that are illuminated or any messages being issued by your PCS.
2. Determine if the charge connector is properly inserted in the vehicle inlet and locked in place.
3. Is the protection light illuminated? If yes, your vehicle may have undergone a series of faults which forced the PCS to terminate the charge process.
  - Unplug the PCS charge connector from the vehicle inlet, to clear the fault.
  - Inspect the charge cable and connector for any signs of possible damage (i.e. cuts, tears or breaks in the cable insulation). If damage is found, stop any further attempts to charge the vehicle and call the PCS manufacturer for repair.

## Charging

- If the charge cable and connector are undamaged, reconnect the vehicle. Is the charge interrupt light illuminated or flashing? Take the vehicle to a vehicle maintenance facility to determine possible fault.
4. Is the service light illuminated? If yes,
- Disconnect the PCS charge connector from the vehicle inlet.
  - Turn off the power to your PCS at the service or disconnect panel. Turning off the power may allow the PCS to clear the fault.
  - Turn the power back on and reconnect the PCS to the vehicle. Is the service light still illuminated? If so, call the PCS manufacturer for repair or replacement.
  - Are the ready or charging lights illuminated? If yes, your PCS is operating correctly. Take the vehicle to a vehicle maintenance facility to determine vehicle fault.
  - If turning the PCS power on and off or unplugging and plugging the charge connector in the vehicle inlet does not cause any of the lights to illuminate on the PCS, the PCS has either failed or has a damaged charge cord. Call the PCS manufacturer for repair or replacement. The toll free number is located on the PCS.

**Your vehicle should be connected to a PCS whenever it is not being driven.**

### **Battery pack heating/cooling system (lead-acid type)**

The battery pack assembly contains 39 eight-volt batteries, wiring, a fan for ventilation and cooling, a control system and optional heaters for cold weather climates. These components work automatically when the vehicle is on-plug charging, and are monitored by the battery pack control system. Heating and cooling do NOT occur key OFF and off-plug. The systems are designed to maintain battery pack temperatures when on-plug as well as during the drive cycle, and may not be able to heat or cool batteries that have reached excessive temperatures.

Battery temperatures tend to be warmer than outside temperature if driven and fully charged each day. If left off-plug, the batteries will eventually equalize to outside underbody temperature, although this process can take several days to occur. Extended periods off-plug in cold outdoor temperatures can cause the batteries to take several days to warm up.

The heaters maintain the battery pack at approximately 68°F (20°C) and are effective to at least -4°F (-20°C). The cooling fan utilizes outside air,

## Charging

and therefore cooling effectiveness depends upon the temperature difference between the batteries and outside air. The cooling system works to maintain the batteries at approximately 95°F (35°C).

### Equalization

The battery control system will periodically equalize the charge in the batteries, which smooths out battery-to-battery differences in the ability to deliver energy. This results in optimum range and battery life. Equalization is automatically performed approximately every three weeks. The fuel gauge will indicate if insufficient charge time has been allowed.

**Your vehicle should be connected to a PCS whenever it is not being driven.**

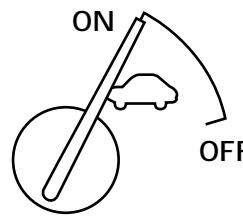
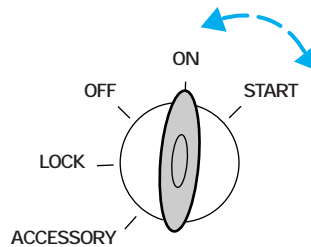
### Partial recharges

A partial recharge is charging the battery pack to less than 100% state of charge and can be performed occasionally without loss of range or performance. However, long term multiple partial charges tend to create imbalances in battery-to-battery state of charge and are strongly discouraged. Usage patterns should be planned to include a full recharge each time the vehicle is discharged.

## Starting

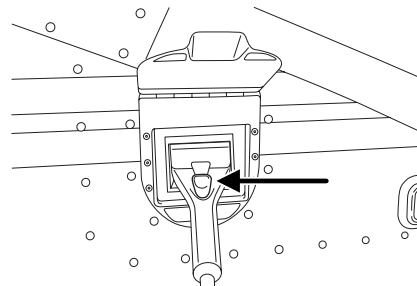
### POSITIONS OF THE IGNITION SWITCH

1. ACCESSORY allows the accessories such as the interior fan to operate while the motor is not powered up.
2. LOCK locks the steering wheel gearshift lever. Allows key removal.
3. OFF disconnects all high-voltage power from the traction battery.
4. ON, warning lights momentarily illuminated. Key position when driving.
5. START powers up the motor and turns the Motor Enable Gauge to the ON position. Powers up all high-voltage power from the drive battery.



### STARTING YOUR VEHICLE

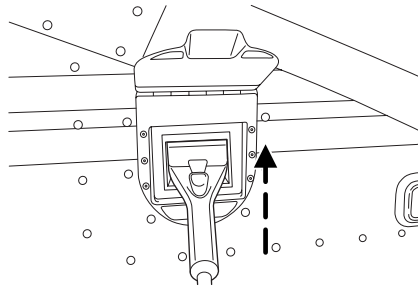
1. If connected, disconnect the PCS plug from the charge inlet and close the charge inlet access door.



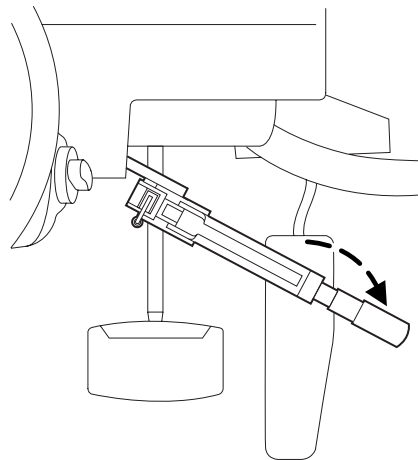
The vehicle will not start until the plug is removed.

## Starting

2. Make sure all vehicle occupants have buckled their safety belts. For more information on safety belts and their proper usage, refer to the seating and safety restraints section.



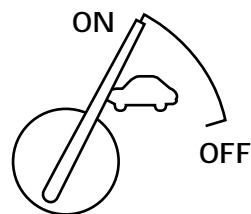
3. Make sure the parking brake is set.



4. Make sure the gearshift lever is in P (Park).

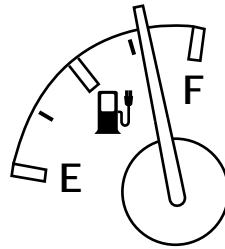


5. Turn the key to the START position and release. The Motor Enabled gauge will point to the ON position, indicating the vehicle is on.

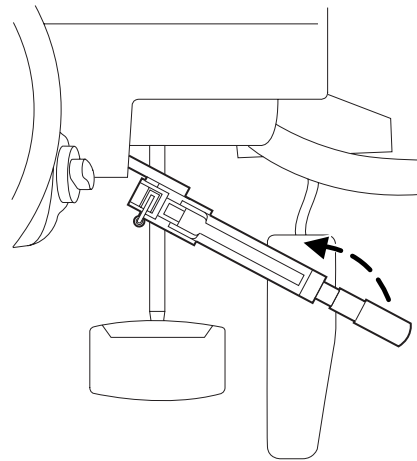


## Starting

6. Check the drive Battery State of Charge gauge to confirm that the drive battery is charged sufficiently for the planned trip.



7. Push the lever to release the parking brake. The vehicle is now ready to be driven.



## Driving

### **REGENERATIVE BRAKING**

Your vehicle uses a unique feature known as regenerative braking. This is used to simulate the engine braking of an internal combustion engine and assist the standard brake system while recovering some of the energy of motion back into the battery.

The standard brake system is designed to fully stop the truck if regenerative braking is not available.

Once the accelerator pedal is released, the vehicle automatically decelerates slowly. This deceleration is caused by using the spinning motor as a generator to create electrical current. This recharges the traction battery and slows the vehicle. In effect, once the accelerator pedal is released, the motor changes from an energy user to an energy producer. When the battery is almost fully charged, the amount of regenerative braking is limited to avoid overcharging.

Regenerative braking does not take the place of the standard friction brakes; it only assists them. Regenerative braking has also been designed to interact with the anti-lock brake system (ABS). Regenerative braking is disabled when the ABS is activated or the battery is fully charged.

### **ANTI-LOCK BRAKE SYSTEM (ABS)**

A noise from the hydraulic pump motor and pulsation in the brake pedal may be observed during ABS braking events. Pedal pulsation coupled with noise while braking under panic conditions or on loose gravel or wet snowy roads is normal and indicates proper functioning of the brake system. If the vehicle has continuous vibration or shudder while braking, felt mainly in the steering wheel, the vehicle most likely needs service.

The ABS operates by detecting the onset of wheel lockup during brake applications and compensating for this tendency.

#### **ABS warning lamp**

The ABS warning lamp in the instrument cluster illuminates if an ABS fault is detected.



## Driving

An ABS fault will also illuminate the BRAKE warning lamp. The base hydraulic brake system will still be effective. Have your vehicle serviced as soon as possible.



### **Using ABS**

- In an emergency or when maximum efficiency from the ABS is required, apply continuous full force on the brake pedal. The ABS will be activated immediately (thus allowing you to retain full steering control of your vehicle) and (providing there is sufficient space) will enable you to avoid obstacles and bring the vehicle to a controlled stop.
- We recommend that you familiarize yourself with this braking technique. Avoid, however, taking any unnecessary risks.
- Regenerative braking is disabled while ABS is active allowing ABS full control.

### **STEERING**

Your vehicle has variable assist power steering. The power steering uses energy from the battery to help steer your vehicle.

If the amount of effort needed to steer your vehicle changes at a constant speed, have the power steering system checked. If the power steering system breaks down (or if the vehicle is turned off), you can steer the vehicle manually, but it takes more effort.


Avoid holding the steering wheel to the extreme right or left for more than five seconds if the vehicle is running.

**When starting the vehicle at extremely cold temperatures (-4°F [-20°C]), a 10-second delay will occur prior to power steering pump start-up. This will result in a delay of power steering assist during initial start-up.**


### **TRANSAXLE OPERATION**

Your vehicle is equipped with a brake shift interlock that prevents shifting of the gearshift lever out of park unless the foot brake is applied. Step on the brake pedal and pull the gearshift lever towards you and downward to move the gearshift lever.

## Driving

 Hold the brake pedal down while you move the gearshift lever from P (Park) to another position. If you do not hold the brake pedal down, your vehicle may move unexpectedly and injure someone.

### P (Park)

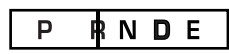
 Always set the parking brake fully and make sure the gearshift is latched in P (Park). Turn off the ignition whenever you leave your vehicle.



Always come to a complete stop before shifting into P (Park). Make sure the gearshift lever is in P (Park).

### R (Reverse)

With the gearshift lever in R (Reverse), the vehicle will move backward. Always come to a complete stop before shifting into and out of R (Reverse). Regenerative braking is applied in reverse too, at a level similar to the D (Drive) gear. When the drive battery is almost fully charged, the amount of regenerative braking is limited to avoid overcharging.



### N (Neutral)

With the gearshift lever in N (Neutral), the vehicle can be started and is free to roll. Hold the brake pedal down while in this gear to prevent movement.



### D (Drive)

With the gearshift lever in D (Drive), the vehicle will move forward. Top speed is limited to 60 mph (96 km/h). The transaxle operates in forward gear. This selection is recommended for highway operation. Deceleration from regenerative braking is commanded when the driver lifts off on the accelerator pedal or when the brake pedal is pressed. However, when the battery is almost



## Driving

fully charged, the amount of regenerative braking is limited.

### E (Economy)

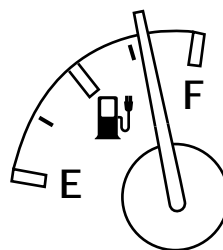
With the gearshift lever in E (Economy), the ECRV operates as in drive, but the effects of



regenerative braking are increased and top speed is limited to 45 mph (72 km/h). This selection is recommended for urban operation when extended driving range is desired. The economy mode is used to maximize the vehicle's range. A stronger deceleration from regenerative braking results from releasing the accelerator pedal. In this regard, it feels similar to low gear on a typical transmission. When the battery is almost fully charged, the amount of regenerative braking is limited.

### Low charge

As your vehicle is driven, the Battery State of Charge Gauge indicates the battery's remaining charge like a fuel gauge does on a conventional gasoline-powered vehicle. When the gauge approaches the Empty (E) position, the vehicle should be connected to a PCS before the drive battery is completely drained.



If your vehicle is driven while the Battery State of Charge Gauge reads E, there are two warning lights that illuminate in stages to alert the driver of the vehicle's condition.

This is the order of what the driver will see:

1. At a 10% battery state of charge, the low fuel lamp illuminates.



2. At a 0% battery state of charge, the low fuel lamp flashes. Driving the vehicle below 0% will damage vehicle systems.

3. The power limit lamp illuminates to indicate that the vehicle's performance is being limited to conserve remaining battery power.

**POWER  
LIMIT**

## Driving

4. The power limit lamp flashes to indicate that the vehicle's performance has been further limited.

### **Driving on snow and ice**

The regenerative braking system interacts with the ABS so if the wheels begin to slide, ABS will activate and regenerative braking will be disabled.

**Vehicle coasting distance will increase when regenerative braking is reduced by ABS activation.**

### **Driving on hill or slope terrain**

When driving down hills, regenerative braking may be used to maintain speed while recovering energy similar to the way engine braking is typically used. E (Economy) gear provides the maximum amount of "engine braking," like low gear in an automatic transmission.

Once the accelerator pedal is released, the vehicle automatically and slowly decelerates. This deceleration is caused by using the spinning motor as a generator to create electrical current. This recharges the traction battery and slows the vehicle. In effect, once the accelerator pedal is released, the motor changes from an energy user to an energy producer.

When the battery is fully charged, regenerative braking is eliminated to prevent overcharging of the traction batteries. As the traction batteries state of charge begins to diminish with driving usage the amount of regenerative braking is allowed to increase to assist the standard braking system.

Regenerative braking does not take the place of the standard friction brakes; it only assists them. Regenerative braking has also been designed to interact with the anti-lock brake system (ABS). Regenerative braking is disabled when the ABS is activated.

### **ENERGY TIPS**

Your vehicle has a customer range of approximately 45 miles ( 72 kilometers) with the standard lead-acid type traction battery. This range is affected by the use of vehicle accessories, driving habits and weather conditions. To maximize the vehicle's range, follow these steps:

- Use the E (Economy) gear.
- Keep the tires properly inflated to 35 psi (241 kpa).

## Driving

- Avoid frequent full throttle usage.
- Maintain a steady speed while driving.
- Limit the use of max heating of the vehicle interior.
- Avoid hard acceleration and deceleration.

**In addition to these steps, connect the vehicle to a Power Control Station (PCS) when parked at your delivery unit. This will keep the battery as charged as possible.**



To avoid injury, never run the vehicle with one wheel off the ground, such as when changing a tire.

## DRIVING THROUGH WATER

Do not drive quickly through standing water, especially if the depth is unknown. Traction or brake capability may be limited.

If driving through deep or standing water is unavoidable, proceed very slowly. Never drive through water that is higher than the bottom of the hubs.

Once through the water, always try the brakes. Wet brakes do not stop the vehicle as effectively as dry brakes. Drying can be improved by moving your vehicle slowly while applying light pressure on the brake pedal.

## VEHICLE LOADING

Before loading a vehicle, familiarize yourself with the following terms:

- **Base Curb Weight:** Weight of the vehicle including any standard equipment, fluids, lubricants, etc. It does not include passengers or aftermarket equipment.
- **Payload:** Combined maximum allowable weight of cargo, passengers and optional equipment. The payload equals the gross vehicle weight rating minus base curb weight.
- **GVW (Gross Vehicle Weight):** Base curb weight plus payload weight. The GVW is not a limit or a specification.
- **GVWR (Gross Vehicle Weight Rating):** Maximum total weight of the base vehicle, passengers, optional equipment and cargo. The GVWR is specific to each vehicle and is listed on the Safety Certification Label on the driver's door pillar.

## Driving

- **GAWR (Gross Axle Weight Rating):** Carrying capacity for each axle system. The GAWR is specific to each vehicle and is listed on the Safety Certification Label on the driver's door pillar.
- **GCW (Gross Combined Weight):** The combined weight of the towing vehicle (including passengers and cargo) and the trailer.
- **GCWR (Gross Combined Weight Rating):** Maximum combined weight of towing vehicle (including passengers and cargo) and the trailer. The GCWR indicates the maximum loaded weight that the vehicle is designed to tow.



Do not exceed the GVWR or the GAWR specified on the certification label.

Do not use replacement tires with lower load carrying capacities than the originals because they may lower the vehicle's GVWR and GAWR limitations. Replacement tires with a higher limit than the originals do not increase the GVWR and GAWR limitations.

The Safety Certification Label, found on the left side of the interior bulkhead, lists several important vehicle weight rating limitations. Before adding any additional equipment, refer to these limitations. If you are adding weight to the front of your vehicle, (potentially including weight added to the cab), the weight added should not exceed the front axle reserve capacity (FARC). Additional frontal weight may be added to the front axle reserve capacity provided you limit your payload in other ways (i.e. restrict the number of passengers or amount of cargo carried).

Always ensure that the weight of passengers, cargo and equipment being carried is within the weight limitations that have been established for your vehicle including both gross vehicle weight and Front and rear gross axle weight rating limits. Under no circumstance should these limitations be exceeded. Exceeding any vehicle weight rating limitation could result in serious damage to the vehicle and/or personal injury.

Overloading can result in loss of vehicle control and personal injury, either by causing component failures or by affecting vehicle handling. It can also shorten the service life of the vehicle.

## Driving



The components of your vehicle are designed to provide satisfactory service if the vehicle is not loaded in excess of either the Gross Vehicle Weight Rating (GVWR) or the maximum front and rear Gross Axle Weight Ratings (GAWRs)

### DRIVER DAILY CHECK LIST

Before operating the vehicle, be sure you know how to use the vehicle and its equipment.

#### BEFORE ENTERING THE VEHICLE

1. See that the windows, mirrors, lights and reflectors are undamaged, clean and unobstructed.
2. If any tire does not look normal, check it with a pressure gauge.
3. Look for fluid leaks.
4. Be sure everything is properly stowed.
5. If you are about to back up, check the area behind the vehicle.

#### BEFORE DRIVING THE VEHICLE



Never let anyone ride in the cargo area or any other place in or on this vehicle where there is no safety belt. Always properly fasten the safety belt.

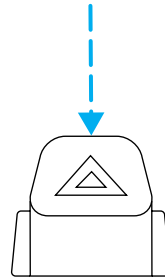
1. Adjust the seat.
2. Adjust the outside mirrors.
3. Fasten the safety belt.
4. Close and lock all the doors.
5. Check that all the warning lights work as the key is turned to Run or Start.
6. Check all gauges.
7. Release the parking brake, and ensure that the brake light turns off.

## Roadside emergencies

### HAZARD FLASHER

Use only in an emergency to warn traffic of vehicle breakdown, approaching danger, etc. The hazard flashers can be operated when the ignition is off.

- The hazard lights control is located on top top left side of the instrument panel.
- Depress hazard lights control to activate all hazard flashers simultaneously.
- Depress control again to turn the flashers off.



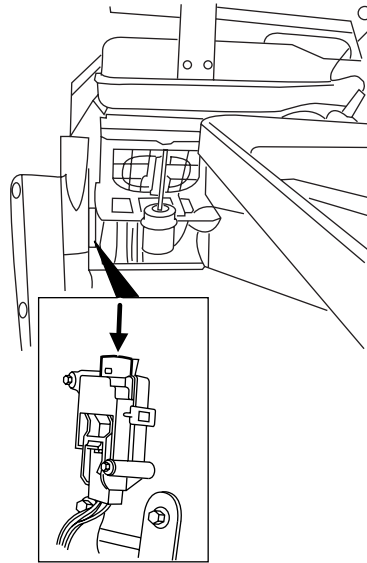
### INERTIA SHUT OFF SWITCH

If the Power Reset Lamp illuminates, it indicates that the inertia shut off switch has been activated. If there is no damage to the vehicle, reset the switch to reactivate the high-voltage power systems and restart the vehicle.

**POWER  
RESET**

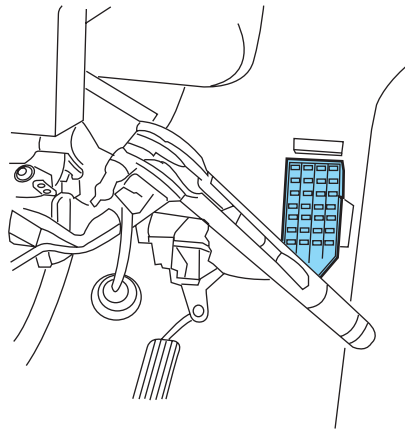
## Roadside emergencies

The inertia shut off switch is located under the dashboard to the far left of the vehicle near the heater box. Push down on the red button to reset the switch. If there is damage to the vehicle, have the vehicle towed to a vehicle maintenance facility.



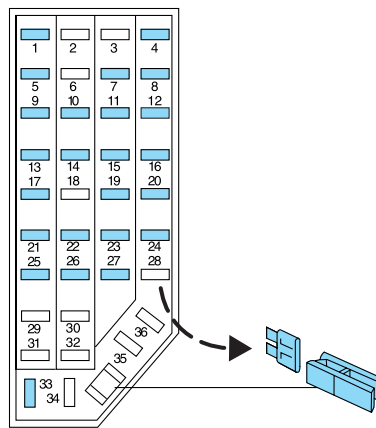
## PASSENGER COMPARTMENT FUSE PANEL

The fuse panel is under the right-hand side of the instrument panel facing the driver side door.



## Roadside emergencies

To remove a fuse, use the fuse puller provided on the fuse panel.



The passenger compartment fuse panel fuses are coded as follows:

Fuse/relay location	Fuse amp rating	Description
1	10	Instrument cluster
2	—	Not used
3	—	Not used
4	10	Left headlamp
5	7.5	Data link connector (DLC)
6	—	Not used
7	7.5	Exterior lighting
8	10	Right headlamp
9	10	Traction inverter module (TIM)
10	7.5	Generic electronic module (GEM), shift lock actuator
11	7.5	Traction inverter module (TIM)
12	10	Driver Comfort Fan
13	10	Brake on/off (BOO) relay, brake on/off (BOO) switch
14	10	ABS Control Module
15	7.5	Main light switch, instrument cluster

## Roadside emergencies

Fuse/relay location	Fuse amp rating	Description
16	30	Windshield wiper motor, windshield wiper relays
17	10	Cigar lighter
18	—	Not used
19	15	Steering wheel sensor, interface adapter assembly (IAA) module, contactor box, battery controller module (BCM), power steering controller assembly
20	10	Generic electronic module (GEM)
21	15	Hazard warning flasher relay
22	15	Turn signal flasher relay, multi-function switch
23	15	Main light switch
24	7.5	Traction inverter module (TIM)
25	7.5	Generic electronic module (GEM)
26	15	Backup lamps
27	10	Battery saver relay, dimmer module, interior lamps relay, generic electronic module (GEM)
28	—	Not used
29	—	Not Used
30	—	Not used
31	—	Not used
32	—	Not used
33	15	Highbeam headlamp
34	—	Not used
35	—	Not used
36	—	Not used

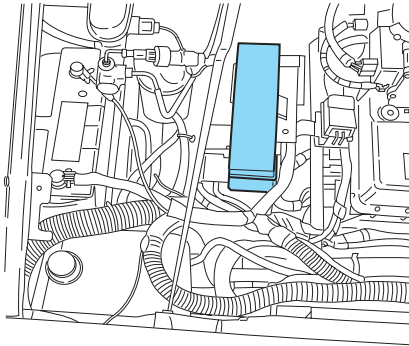



Always disconnect the battery before servicing high current fuses.

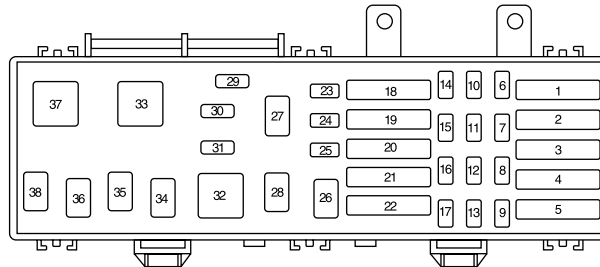
## Roadside emergencies

### LOW VOLTAGE POWER DISTRIBUTION BOX

The power distribution box is located in the underhood compartment near the auxiliary battery. The power distribution box contains high-current fuses that protect your vehicle's main electrical systems from overloads.



 Always replace the cover to the power distribution box before reconnecting the auxiliary battery or refilling fluid reservoirs.



The high-current fuses are coded as follows:

Fuse/relay location	Fuse amp rating	Description
1	MAXI 50	Ignition Switch
2	MAXI 40	I/P fuse panel fuses 1, 5, 9, 13, 17, 21, 25 and 29
3	MAXI 30	ABS
4	MAXI 60	ABS Pump

## Roadside emergencies

Fuse/relay location	Fuse amp rating	Description
5	MAXI 50	Fan speed relays, cooling fan, interface adapter assembly (IAA) module
6	—	Not Used
7	MINI 10	Inertia switch, contactor box
8	MINI 15	Contactor box
9	MINI 10	Interface adapter assembly (IAA) module
10	—	Not Used
11	MINI 10	Horn relay, horn switch, horn
12	MINI 10	Battery controller module (BCM)
13	MINI 20	Vacuum relay, vacuum pump
14	MINI 20	Battery Charger
15	—	Not used
16	MINI 20	I/P panel fuses 23 and 27, Park lamps
17	—	Not used
18	MAXI 30	Headlamps, multi-function switch
19	MAXI 20	Oil pump relay, transaxle oil pump
20	MAXI 20	Coolant pump relay, coolant pump
21	MAXI 40	Heater blower motor relay, heater blower motor, interface adapter assembly (IAA)
22	MAXI 30	Battery Pack Blower (BCM)
23	J50	Windshield wiper park relay
24	MINI 5	ABS active signal
25	—	Not used
26	—	Not used
27	J50	Windshield wiper hi/low relay
28	J50	Brake on/off (BOO) relay
29	J50	Coolant pump relay
30	—	Diode
31	—	Diode
32	—	Not used
33	J50	Vacuum pump relay

## Roadside emergencies

Fuse/relay location	Fuse amp rating	Description
34	I50	Battery pack blower relay
35	J50	Horn relay
36	J50	Windshield washer pump relay
37	I50	Blower motor relay
38	—	Not used

### JUMP-STARTING THE AUXILIARY BATTERY

The ECRV can be jump-started like a gasoline-powered Ranger. Note that if the traction battery is dead, jumping the auxiliary battery will not fix the problem. Look at the battery state of charge gauge to verify the traction battery is not discharged. The auxiliary battery might be dead from accessories that were left on accidentally, like the headlights, or dome lamp.

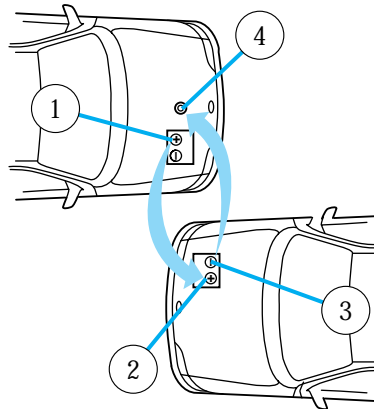
#### Preparing your vehicle to be jump started


1. Use only a 12-volt supply to start your vehicle. If you connect your battery to a 24-volt power supply, you can damage your electrical components.
2. Do not disconnect the battery of the disabled vehicle as this could damage the vehicle's electrical system.
3. Park the booster vehicle close to the hood of the disabled vehicle making sure they do not touch. Set the parking brake on both vehicles and stay clear of moving parts.
4. Check all battery terminals and remove any excessive corrosion before you attach the battery cables.

## Roadside emergencies

### Connecting the jumper cables


1. Position the vehicles so that they do not touch one another.
2. Switch off the "ignition". Switch off any unnecessary electrical equipment.
3. Connect the positive (+) terminal of the discharged battery (1) to the positive (+) terminal of the booster battery (2).
4. Connect one end of the second lead to the negative (-) terminal of the booster battery (3) and the other end to the module mounting stud (4), not to the negative (-) terminal of the discharged battery.
5. Make sure that the jump leads are clear of moving parts.



 Do not connect the end of the second cable to the negative (-) terminal of the battery to be jumped. A spark may cause an explosion of the gases that surround the battery.

### Starting your vehicle

1. Turn the "ignition" ON and start the booster vehicle.
2. Turn the "ignition" ON and start the vehicle with the discharged battery.
3. Once the vehicle has been started, allow the vehicle to run for approximately 5 minutes before disconnecting the leads to insure the auxiliary battery is completely charged back up.

 The gases around the battery can explode if exposed to flames, sparks, or lit cigarettes. An explosion could result in injury or vehicle damage.

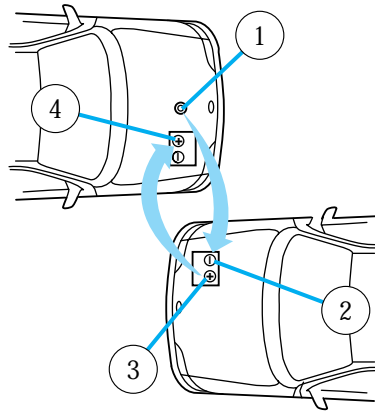
## Roadside emergencies



Batteries contain sulfuric acid which burns skin, eyes, and clothing.

### Removing the jumper cables

1. Remove the jumper cables in reverse order. Take the cable off the metallic surface (1) first, followed by the cable on the negative (-) booster battery terminal (2).
2. Remove the cable from the positive (+) terminal of the booster battery (3) and then the discharged battery (4).



## Maintenance and care

### SERVICE RECOMMENDATIONS

This vehicle should only be serviced by a Ford trained electric vehicle technician.

To help you service your vehicle:

We provide a scheduled maintenance guide which makes tracking routine service easy.

Use only recommended lubricants, fluids and service parts conforming to specifications. Motorcraft parts are designed and built to provide the best performance in your vehicle.

### Precautions when servicing your vehicle

Be especially careful when inspecting or servicing your vehicle.

Keep all lit cigarettes, open flames and other lit material away from the battery.

### Working with the engine off

1. Set the parking brake and ensure the gearshift is securely latched in P (Park).
2. Turn off the vehicle and remove the key.
3. Block the wheels to prevent the vehicle from moving unexpectedly.

### Working with the engine on

1. Set the parking brake and ensure the gearshift is securely latched in P (Park).
2. Block the wheels to prevent the vehicle from moving unexpectedly.



The cooling fan is automatic and may come on at any time. Always disconnect the negative terminal of the battery before working near the fan.

**Maintenance and care**

**Scheduled maintenance chart**

Item	Interval									
	1 yr.	2 yrs.	3 yrs.	4 yrs.	5 yrs.	6 yrs.	7 yrs.	8 yrs.	9 yrs.	10 yrs.
Rotate tires 5000 miles MAX	x	x	x	x	x	x	x	x	x	x
Inspect disc brake system, lubricate caliper slides	x	x	x	x	x	x	x	x	x	x
Climate control filter (More frequent changes may be necessary in dusty and dirty conditions)	x	x	x	x	x	x	x	x	x	x
Replace vacuum pump 2A451					x					x

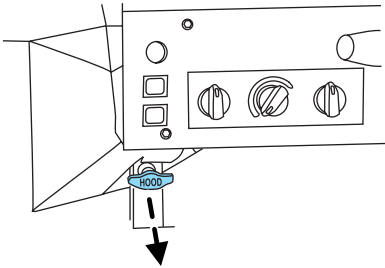
## Maintenance and care

Inspect and lubricate front wheel bearings			x			x			x	
Inspect parking brake system			x			x			x	
Inspect cooling system	x	x	x	x	x	x	x	x	x	x
Replace transaxle fluid*			x			x			x	
Inspect power steering fluid	x	x	x	x	x	x	x	x	x	x
Inspect brake fluid	x	x	x	x	x	x	x	x	x	x

\*Replace transaxle fluid every 3 years or 36,000 miles, whichever comes first.

### HOW TO OPEN THE HOOD

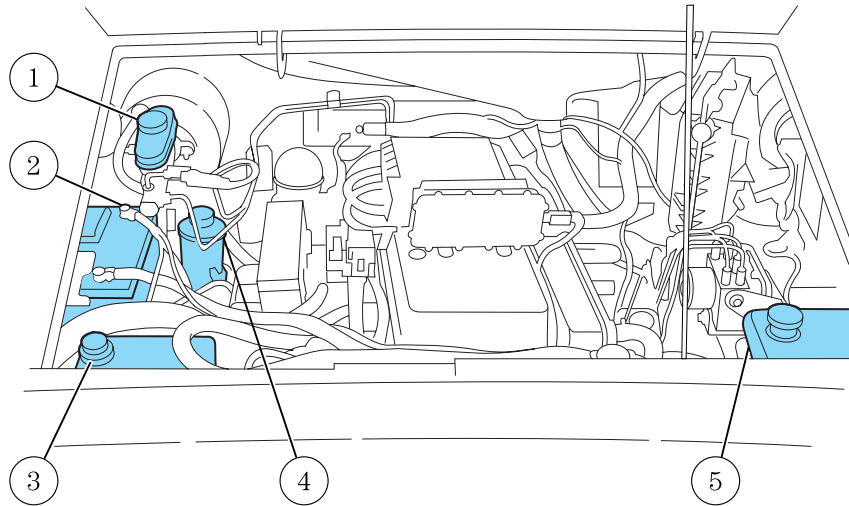
1. Inside the vehicle, pull the hood release handle located under the bottom left of the steering wheel.



## Maintenance and care

2. Go to the front of the vehicle, release the safety catch, lift the hood, and support it with the prop rod.

Identifying components in the underhood compartment:



1. Brake fluid reservoir
2. Auxiliary battery
3. Coolant reservoir
4. Power steering fluid reservoir
5. Windshield washer fluid reservoir

The underhood compartment contains many high-voltage components and wiring. Do not attempt to service any of these components. Service must be performed by qualified personnel only.

**The high-voltage wiring is covered in orange convolute for easy identification. Underhood high voltage components have warning labels with one or all of the following icons.**



## Maintenance and care

### COOLANT

This vehicle is equipped with a cooling system to cool running temperatures of electrical components and the electric drive motor. Check the level of the coolant in the reservoir at least once a month. Be sure to read and understand *Precautions* in this chapter when servicing your vehicle.

If the coolant has not been checked for a long period of time, the coolant reservoir may eventually empty. If this occurs, add coolant to the coolant reservoir.

Automotive fluids are not interchangeable; do not use coolant, antifreeze or windshield washer fluid outside of its specified function and vehicle location.

#### Adding coolant

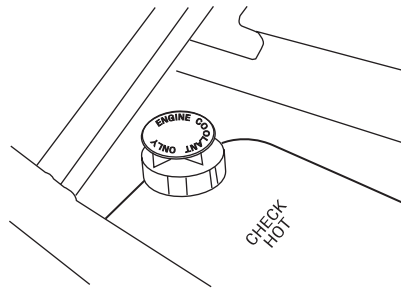
Add a 50/50 mixture of coolant and water to the coolant reservoir. **DO NOT ADD IT DIRECTLY TO THE RADIATOR.** Add straight water only in an emergency, and replace it with a 50/50 mixture of coolant and distilled water as soon as possible.

Check the coolant level in the coolant recovery reservoir the next few times you drive the vehicle. If necessary, add enough of a 50/50 mixture of coolant and water to bring the liquid level to the fill line on the reservoir.

Use Ford Premium Cooling System Fluid E2FZ-19549-AA or an equivalent DEX-COOL coolant or a coolant meeting Ford specifications ESE-M97B44-A. Ford Extended Life Engine Coolant is an orange colored silicate-free coolant that does not need to be replaced for the life of your vehicle.

If sprayed on the windshield, coolant could make it difficult to see through the windshield.

The use of an improper coolant may void your warranty of your vehicle's cooling system.



## Maintenance and care

Always dispose of used automotive fluids in a responsible manner. Follow your community's regulations and standards for recycling and disposing of automotive fluids.

### Coolant refill capacity

Have your dealer check the cooling system for leaks if you have to add more than a litre (quart) of coolant per month.

### POWER STEERING FLUID LEVEL

Check the power steering fluid at least twice a year. If adding fluid is necessary, use only MERCON® ATF.

1. Turn the "ignition" ON.
2. Turn the steering wheel left and right to the steering stops several times. Do not keep wheel at steering stops longer than 5 seconds.
3. Turn the "ignition" OFF.
4. Check the fluid level. It should be between the MAX and MIN lines on the reservoir. Do not add fluid above the MAX level.
5. If the fluid is low, add fluid.

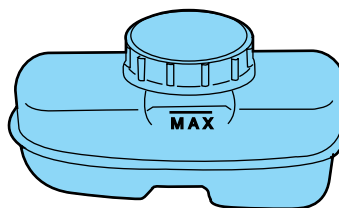


### BRAKE FLUID

#### Checking and adding brake fluid

Brake fluid should be checked and refilled as needed at least once each year:

1. Check the reservoir cap before removal to prevent dirt or water from entering the reservoir.
2. Visually inspect the fluid level.
3. If necessary, add brake fluid until the level reaches MAX. Do not fill above this line.



## Maintenance and care

4. Use only a DOT 3 brake fluid certified to meet Ford specifications. Refer to *Lubricant specifications* in the *Capacities and specifications* chapter.



Brake fluid is toxic.



If you use a brake fluid that is not DOT 3, you will cause permanent damage to your brakes.

## TRACTION BATTERY PACK ASSEMBLY

No regular maintenance, other than regular charging is required.

The traction battery pack assembly is located underneath the vehicle between the wheel base and frame rails. The battery pack assembly contains wiring, a fan for ventilation and cooling, and a control system. The standard lead acid battery pack contains 39 eight-volt batteries and optional heater for cold weather climates. The traction battery provides energy to propel the vehicle and also maintains energy for accessory functions. The battery pack assembly is a 2,000-pound unit lead-acid type.



Never position a jack or hoist underneath the traction battery pack. Doing so may result in damage to your vehicle.



This battery pack should only be serviced by an authorized electric vehicle technician. Improper handling can result in personal injury or death.

## AUXILIARY BATTERY

Your vehicle is equipped with a sealed maintenance-free battery.

For longer, trouble-free operation, keep the top of the battery clean and dry. Also, make certain the battery cables are always tightly fastened to the battery terminals.

If you see any corrosion on the battery or terminals, remove the cables from the terminal(s) and clean with a wire brush. You can neutralize the

## Maintenance and care

acid solution with a solution of baking soda and water. Reinstall the cables when you are done cleaning them, and apply a small quantity of grease to the top of each terminal to help prevent corrosion.

For longer, trouble-free operation, keep the top of the battery clean and dry. Also, make certain the battery cables are always tightly fastened to the battery terminals.

If you see any corrosion on the battery or terminals, remove the cables from the terminals and clean with a wire brush. You can neutralize the acid with a solution of baking soda and water.



Batteries normally produce explosive gases which can cause personal injury. Therefore, do not allow flames, sparks or lighted substances to come near the battery. When working near the battery, always shield your face and protect your eyes. Always provide proper ventilation.



When lifting a plastic-cased battery, excessive pressure on the end walls could cause acid to flow through the vent caps, resulting in personal injury and/or damage to the vehicle or battery. Lift the battery with a battery carrier or with your hands on opposite corners.



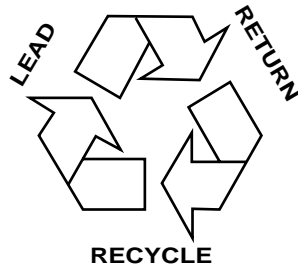
Keep batteries out of reach of children. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Shield your eyes when working near the battery to protect against possible splashing of acid solution. In case of acid contact with skin or eyes, flush immediately with water for a minimum of 15 minutes and get prompt medical attention. If acid is swallowed, call a physician immediately.



Battery posts, terminals and related accessories contain lead and lead compounds. **Wash hands after handling.**

## Maintenance and care

- Always dispose of automotive batteries in a responsible manner. Follow your local authorized standards for disposal. Call your local authorized recycling center to find out more about recycling automotive batteries.



### WINDSHIELD WIPER BLADES


Check the wiper blades at least twice a year or when they seem less effective. Substances such as tree sap and some hot wax treatments used by commercial car washes reduce the effectiveness of wiper blades.

#### Checking the wiper blades

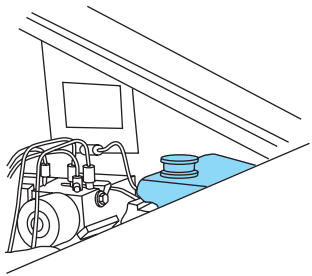
If the wiper blades do not wipe properly, clean both the windshield and wiper blades using undiluted windshield wiper solution or a mild detergent. Rinse thoroughly with clean water. To avoid damaging the blades, do not use fuel, kerosene, paint thinner or other solvents.

#### Windshield washer fluid

##### Checking and adding washer fluid

Check the washer fluid whenever you stop for fuel. The reservoir is highlighted with a  symbol.

If the level is low, add enough fluid to fill the reservoir. In very cold weather, do not fill the reservoir all the way.



Only use a washer fluid that meets Ford specifications. Refer to *Lubricant specifications* in the *Capacities and specifications* chapter. State or local regulations on volatile organic compounds may restrict the use of methanol, a common windshield washer antifreeze additive. Washer fluids containing non-methanol antifreeze agents should be used

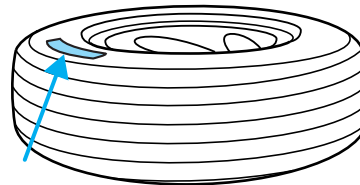
## Maintenance and care

only if they provide cold weather protection without damaging the vehicle's paint finish, wiper blades or washer system.

**Do not put washer fluid in the engine coolant reservoir. Washer fluid placed in the cooling system may harm engine and cooling system components.**

### INFORMATION ABOUT UNIFORM TIRE QUALITY GRADING

New vehicles are fitted with tires that have a rating on them called Tire Quality Grades. The Quality grades can be found where applicable on the tire sidewall between tread shoulder and maximum section width. For example:



- **Treadwear 200 Traction AA Temperature A**

These Tire Quality Grades are determined by standards that the United States Department of Transportation has set.

Tire Quality Grades apply to new pneumatic tires for use on passenger cars. They do not apply to deep tread, winter-type snow tires, space-saver or temporary use spare tires, tires with nominal rim diameters of 10 to 12 inches or limited production tires as defined in Title 49 Code of Federal Regulations Part 575.104(c) (2).

**U.S. Department of Transportation-Tire quality grades:** The U.S. Department of Transportation requires Ford to give you the following information about tire grades exactly as the government has written it.

#### Treadwear

The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test course. For example, a tire graded 150 would wear one and one-half (1 1/2) times as well on the government course as a tire graded 100. The relative performance of tires depends upon the actual conditions of their use, however, and may depart significantly from the norm due to variations in driving habits, service practices, and differences in road characteristics and climate.

## Maintenance and care

### Traction AA A B C

The traction grades, from highest to lowest are AA, A, B, and C. Those grades represent the tire's ability to stop on wet pavement as measured under controlled conditions on specified government test surfaces of asphalt and concrete. A tire marked C may have poor traction performance.



The traction grade assigned to this tire is based on straight-ahead braking traction tests, and does not include acceleration, cornering, hydroplaning or peak traction characteristics.

### Temperature A B C

The temperature grades are A (the highest), B, and C, representing the tire's resistance to the generation of heat and its ability to dissipate heat when tested under controlled conditions on a specified indoor laboratory test wheel. Sustained high temperature can cause the material of the tire to degenerate and reduce tire life, and excessive temperature can lead to sudden tire failure. The grade C corresponds to a level of performance which all passenger car tires must meet under the Federal Motor Vehicle Safety Standard No. 109. Grades B and A represent higher levels of performance on the laboratory test wheel than the minimum required by law.



The temperature grade for this tire is established for a tire that is properly inflated and not overloaded. Excessive speed, underinflation, or excessive loading, either separately or in combination, can cause heat buildup and possible tire failure.

## SERVICING YOUR TIRES

### Checking the tire pressure

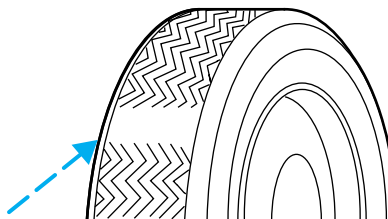
- Use an accurate tire pressure gauge.
- Check the tire pressure when tires are cold, after the vehicle has been parked for at least one hour or has been driven less than 3 miles (5 km).
- Check and adjust tire pressure to recommended specifications found on the Safety Compliance Certification Plate located on the bulk head behind the mail tray every 30 days.


## Maintenance and care


**Note: Driving your vehicle with tires below recommended inflation pressure will significantly affect range between charges. Tire pressure will increase/decrease with every 10° F change in outside air temperature, decreasing with temperature decreases.**


### Replacing the tires

Replace the tires when the wear band is visible through the tire treads.



 When replacing full size tires, never mix radial, bias-belted, or bias-type tires. Use only the tire sizes that are listed on the safety compliance certification plate. Make sure that all tires are the same size, speed rating, and load-carrying capacity. Use only the tire combinations recommended on the decal. If you do not follow these precautions, your vehicle may not drive properly and safely.

 Make sure that all replacement tires are of the same size, type, load-carrying capacity and tread design (e.g., “All Terrain”, etc.), as originally offered by Ford.

 Failure to follow these precautions may adversely affect the handling of the vehicle and make it easier to lose control and roll over.

### Tire rotation

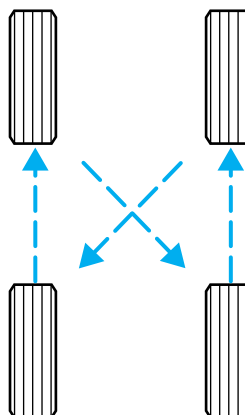
Because your vehicle’s tires perform different jobs, they often wear differently. To make sure your tires wear evenly and last longer, rotate them every 5,000 miles or six months. If you notice that the tires wear unevenly, have them checked.

The following procedure applies to vehicles equipped with single rear wheels, if your vehicle is equipped with dual rear wheels it is

## Maintenance and care

recommended that only the front wheels be rotated (side to side).

Four-tire rotation



### Cleaning the wiper blades, windshield

If the wiper blades do not wipe properly, clean the wiper blade rubber element with undiluted windshield washer solution or a mild detergent. To avoid damaging the blades, do not use fuel, kerosene, paint thinner or other solvents.

If the wiper still does not wipe properly, this could be caused by substances on the windshield such as tree sap and some hot wax treatments used by commercial car washes. Clean the outside of the windshield with a non-abrasive cleaner such as Ford Ultra-Clear Spray Glass Cleaner, (E4AZ-19C507-AA), available from your Ford Dealer. **Do not** use abrasive cleansers on glass as they may cause scratches. The windshield is clean if beads do not form when you rinse it with water. The windshield and wiper blades should be cleaned on a regular basis, and blades or rubber elements replaced when worn.

### Cleaning the instrument panel

Clean with a damp cloth, then dry with a dry cloth.

Avoid cleaner or polish that increases the gloss of the upper portion of the instrument panel. The dull finish in this area helps protect the driver from undesirable windshield reflection.

## Maintenance and care

### ***Cleaning the instrument cluster lens***

Clean with a damp cloth, then dry with a dry cloth.

Do not use household or glass cleaners as these may damage the lens.

### **Cleaning the cargo area window**

Mild soap or detergent and a clean sponge or cloth can be used to wash the Lexan window. Do not use brushes on this type of window. Rinse the window well with clean water. Dry the window with a clean dry cloth or chamois. **Do not scrub or use brushes! Do not clean in the hot sun or at elevated temperatures!**

**Do NOT scrape the Lexan window with any sharp object, such as razor blades, squeegees or snow removal tools.** Some scratches and minor abrasions can be minimized by using a mild automobile polish, such as Johnson Paste Wax. Be sure to follow the manufacturer's instructions.

NEVER use any of the following on the Lexan window:

- abrasive cleaners
- highly alkaline cleaners
- benzene
- gasoline
- acetone
- carbon tetrachloride

The following cleaning agents are compatible with Lexan as long as the manufacturer's recommendations and instructions are followed:

- Joy®
- Top Job®
- Palmolive Liquid®
- Windex with Amonia D®
- VM&Pgrade naphtha



Never scrape the Lexan window with razor blades, squeegees or other sharp objects! Do not scrub, use brushes or abrasive cleaners. Do not clean in the hot sun or at elevated temperatures. Use only mild soap and a clean sponge or soft cloth.

## Capacities and specifications

### MOTORCRAFT PART NUMBERS

Component	Part Number
Climate control air filter	F8YZ-19N619-AA
Auxiliary battery	BXT-59

### REFILL CAPACITIES

Fluid	Ford part name	Vehicle type	Capacity-litres (quarts)
Brake fluid	Ford high performance DOT 3 motor vehicle brake fluid	All	Fill to line in reservoir
Power steering fluid	Motorcraft MERCON® ATF	All	Fill to line in reservoir
Coolant	Ford Premium Cooling System Fluid	All	Fill to line in reservoir
Windshield washer fluid	Ultra-clear windshield	All	Fill to line in reservoir

### FLUID SPECIFICATIONS

Fluid	Ford part name or equivalent	Ford part number	Ford specification
Brake fluid	High performance DOT 3 motor vehicle brake fluid	C6AZ-19542-AB	WSA-M6C25-A and DOT 3
Power steering fluid	Motorcraft MERCON® ATF	XT-2-QDX	MERCON® WSA-M2C195-A

**Capacities and specifications**

<b>Fluid</b>	<b>Ford part name or equivalent</b>	<b>Ford part number</b>	<b>Ford specification</b>
Coolant	Ford Premium Cooling System Fluid	E2FZ-19549-AA	ESE-M97B44-A
Windshield washer fluid	Ultra-clear windshield concentrate	C9AZ-19550-AC or BC	ESR-M17P5-A
Transaxle fluid	Tribolube - L-6 (Pro Gear 21)	F8AZ-19M544-A	

**MOTOR DATA**

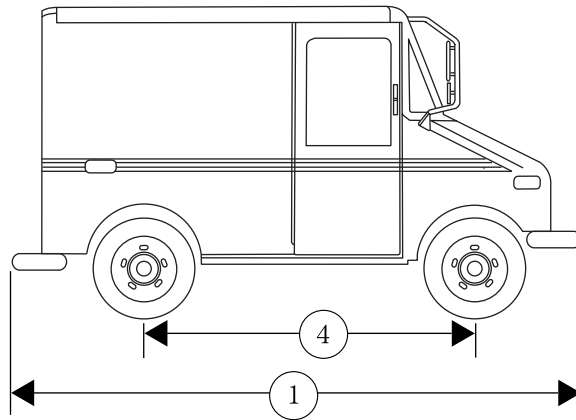
<b>Motor</b>	<b>Data</b>	
Horsepower	90 hp (67 kw)	
Torque	140 lb/ft (190 Nm)	
Traction battery modules	Standard	Lead-acid type, 312 volts, 39 (8 volts each)

**VEHICLE DIMENSIONS**

(1) Overall length	187 in (4 750 mm)
(2) Rear bumper overhang	12.5 in (320 mm)
(3) Top of rear bumper to ground	25 in (630 mm)
(4) Wheelbase	112 in (2850 mm)
(5) Bottom of rear bumper to ground	19 in (480 mm)
(6) Load floor to ground	30 in (765 mm)
(7) Seat surface to ground (uncompressed)	43.5 in (1 105 mm)
(8) Step height	17 in (435 mm)
(9) Front hoodline to ground	42.5 in (1080 mm)
(10) Top of front bumper to ground	23 in (585 mm)

## Capacities and specifications

(1) Overall length	187 in (4 750 mm)
(11) Bottom of front bumper to ground	17 in (430 mm)
(12) Front wheel track	57.5 in (1460 mm)
(13) Rear wheel track	57.5 in (1480 mm)
(14) Overall height	88 in (2235 mm)
(15) Curb to curb turning diameter	39 ft (11.8 m)
(16) Cargo capacity	1000 lb (454 kg)
(17) Cargo volume	180 cu ft (3.06 cu m)



## Capacities and specifications

### IDENTIFYING YOUR VEHICLE

#### Vehicle identification number

The vehicle identification number is attached to a metal tag and is located on the left—hand side of the instrument panel. (Please note that in the graphic XXXX is representative of your vehicle identification number).



## Capacities and specifications

### Certification label

The National Highway Traffic Safety Administration Regulations require that a Certification Label be affixed to a vehicle and prescribe where the Certification Label may be located. The Certification Label is located on the left side of the interior bulkhead next to the cargo compartment door.

VEH MFD BY FORD MOTOR COMPANY	
DATE: XXXXX	
BODY MFD BY GRUMMAN OLSON INDUSTRIES	
DATE: XXXXX GVWR XXXX	
GAWR FRT XXXXXXX / XXXXXXX	
GAWR RR XXXXXXX / XXXXXXX	
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF THE MANUFACTURE OF THE COMPLETE VEHICLE SHOWN ABOVE.	
TYPE TRUCK	VEH ID XXXXXXXXXXXXXXXXXXXX
	CHASSIS ID XXXXXXXXXXXXXXXXXXXX
USPS DATA	
MODEL NO. ELLV	CONTRACT NO. XXXXXX-XX-X-XXXX
OVERALL HEIGHT XX IN. OVERALL WIDTH XXIN. OVERALL LENGTH XXXXIN.	
WARRANTY EXPIRATION DATE IS XXXXX	

### REPORTING SAFETY DEFECTS

If you believe that your vehicle has a defect that could cause a crash, or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Ford Motor Company.



If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer or Ford Motor Company.

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-800-424-9393 (202-366-0123 in the Washington D.C. area) or write to:

NHTSA  
U.S. Department of Transportation  
400 Seventh Street  
Washington D.C. 20590

You can also obtain other information about motor vehicle safety from the Hotline.

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