

# *Carmel* 2024 OWNER'S MANUAL





## 24-Hour Roadside Assistance

The 24-Hour Roadside Assistance Benefits are provided through SafeRide Motor Club ("RSA Provider") which is the obligor for the benefits. The maximum benefit allowed for each service is stated below. All service fees exceeding the maximum benefit are your responsibility. 24-Hour Roadside Assistance Benefits are available in the United States and Canada. Services are not available in areas where state providers are exclusively utilized. A 24 month term will apply. For membership information other than obtaining 24-Hour Roadside Assistance Benefits, contact NWAN, Inc., P.O. Box 30308, Cleveland, Ohio 44130, 1-800-810-8458. **MEMBER BENEFITS**

1. Towing and Wrecker Service: In the event the unit is unable to safely proceed under its own power, the RSA Provider will arrange to have the unit transported to the nearest qualified repair service facility and will pay up to a maximum of \$200 per occurrence for the transportation expenses. In order to be transported, the unit must be accessible from an incorporated paved road.
2. Flat Tire Change: In the event of a flat tire on the unit, the RSA Provider will arrange for a service provider to mount an inflated spare tire provided by you and will pay up to a maximum of \$150 per occurrence for the flat tire service call. If an inflated spare tire is not available, then the RSA Provider will arrange to have the unit transported to the nearest tire center.
3. Emergency Gas Delivery Service: In the event the unit runs out of gas, the RSA Provider will arrange for a service provider to deliver an emergency supply of gas for the unit and will pay up to a maximum of \$150 per occurrence for the gas delivery service, excluding the cost of the gas. You are responsible for the cost of the emergency supply of gas at the time of delivery.
4. Battery Jump Service: In the event the unit will not crank due to a weak or "run-down" battery, the RSA Provider will arrange for a service provider to boost or jump-start the battery and will pay up to a maximum of \$150 per occurrence for the battery jump service.
5. Key Lockout Service: In the event the keys for the unit are lost, broken, or accidentally locked in the unit, or the unit has a frozen lock, the RSA Provider will arrange for a service provider to unlock the unit and will pay up to a maximum of \$150 per occurrence for the locksmith service, excluding the cost of replacement keys. You are responsible for the cost of any replacement keys at the time of service.

**I UNDERSTAND THAT I MUST CALL 1-888-213-8540 BEFORE USING ANY OF THE SERVICES LISTED ABOVE. CALLING AFTER SERVICE IS PERFORMED WILL RESULT IN DENIAL OF A CLAIM. I UNDERSTAND THIS MEMBERSHIP IS NOT ELIGIBLE FOR CANCELLATION.**

The Vanderhall Carmel is NOT a car.

The Vanderhall Carmel complies with Federal Motor Vehicle Safety Standards (FMVSS) and regulations of the United States Department of Transportation (DOT) applicable to motorcycles in the USA.

The Vanderhall Carmel vehicle does NOT comply with Federal Motor Vehicle Safety Standards (FMVSS) and regulations of the United States Department of Transportation (DOT) applicable to passenger cars in the USA.

Always wear a helmet when operating or riding in a Vanderhall Carmel.



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*Introduction*

## Introduction



The names, logos, emblems, slogans, vehicle model name, and vehicle body designs appearing in this manual including, but not limited to, Vanderhall and Carmel are trademarks of Vanderhall Motor Works.

### Using this Manual

To quickly locate information about the vehicle, use the Index in the back of the manual. It is an alphabetical list of what is in the manual and the page number where it can be found.

### Danger, Warning, and Caution

Warning messages found on vehicle labels and in this manual describe hazards and what to do to avoid or reduce them.

#### ! Danger

Danger indicates a hazard with a high level of risk which will result in serious injury or death

#### ! Warning

Warning indicates a hazard that could result in injury or death

#### Caution

Caution indicates a hazard that could result in property or vehicle damage

## Symbols

Your Vanderhall Carmel has components and labels that utilize symbols instead of text. Symbols are often shown with text describing the operation or information related to a specific component, control, message, gauge, or indicator



: Shown when the owner manual contains additional instructions or information.

## Vehicle symbol Chart

**ABS** : Antilock Brake System

**Brake** : Brake System Warning Light

**TC** : Traction Control



: Do Not Puncture



: Do Not Service



: Engine Coolant Temperature



: Flame/Fire Prohibited



: Fuel Gauge



: Fuses



: Headlamp High/Low-Beam Changer



: Malfunction Indicator Lamp



: POWER



: Under Pressure





*Overview*

## Quick Overview

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## Operating the Doors

To open a door:

1. Pull the strap at the front left (driver) or front right (passenger) of the dash until you feel click.
2. With your other hand, pull the door open.



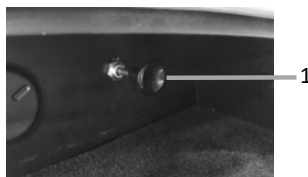
### **! Warning**

Do not use door pull strap as leverage when exiting the vehicle. If you do, you will likely damage the mechanism.

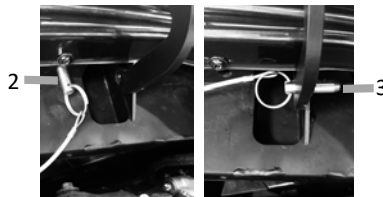
## Operating the Hood

To open the hood:

1. Pull knob inside of glove box.



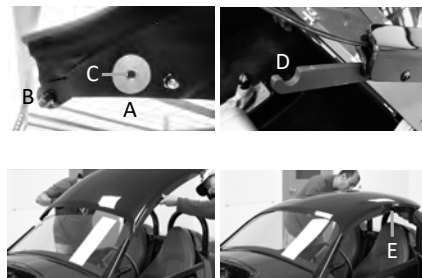
2. Raise hood and pull pin from stored location at front of hood opening.
3. Insert into designated location depicted in image below.



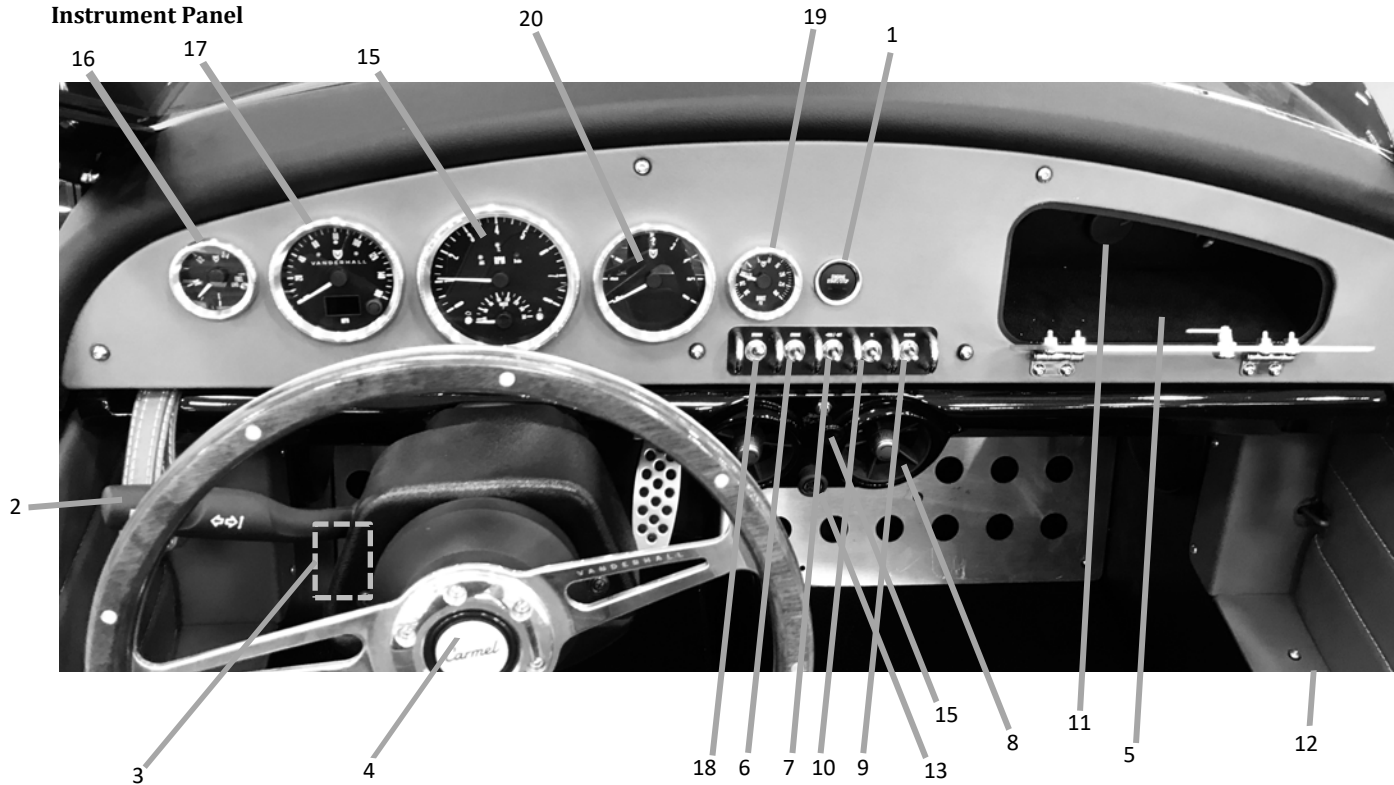
## Installing the Capshade

To install the capshade:

1. Remove thumb screws (A) on either side of capshade.
2. With one person on either side, slide front of capshade so that capshade bracket post (B) is below the windshield bracket and thumb screw stud (C) rests in slot of windshield bracket (D).
3. Replace thumb screws (C), hand tighten.
4. Secure straps to vehicle hoops (E).



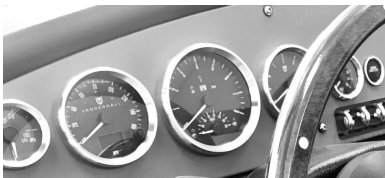
12  
**Instrument Panel**



1. Start Button
2. Turn Signal Lever, High Beam Switch
3. Steering Wheel Adjustment
4. Horn
5. Glove Box
6. Cruise Control Activation
7. Cruise Control Speed Adjustment
8. Air Vent
9. Hazard Warning Flashers
10. Traction Control
11. Accessory Power Port
12. Passenger Heated Seat Control
13. Heater Fan Speed
14. Heater Temperature Control
15. Tachometer
16. Fuel Gauge
17. Speedometer
18. Stereo Power Switch
19. Shift Gauge/Clock/Emblem/Boost Gauge Options
20. Gear Indicator

## Quick Start Guide

### Start



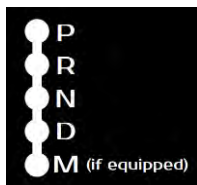
1. Shift position in park
2. Remote key in proximity
3. Depress brake pedal
4. Push button to start

### **! Warning**

Shifting out of park before gauges have completed their sweep cycle will shut off the engine. To restart use the following process:

1. Shift back into park
2. Release foot from brake
3. Press start button until all light are cleared
4. Wait one minute
5. Repeat starting procedure

### Drive

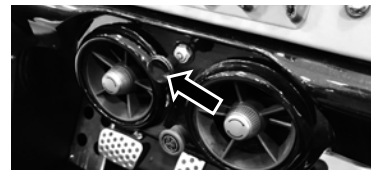


1. Depress brake pedal (Note: see warning on left of page 14)
2. Push down on shifter
3. Shift to D
4. Release Brake



### Bluetooth

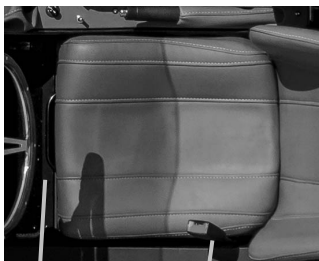
1. Set farthest left toggle to up position
2. Search on device and pair to WW-BT-VC
3. Turn and hold left/right for volume control
4. Quick turn knob to advance/reverse song



### Heater

1. Turn fan dial to the right to turn on and adjust speed.
2. Push black knob for vent and pull for heater

## Seats



1

2

1. Seat Adjustment Handle
2. Safety Belt Latch

## Seat Adjustment

To adjust the seat

1. Pull the handle at the front of the seat
2. Slide the seat to the desired position and release the handle
3. Try to move the seat back and forth to ensure it is locked in place

## Heated Seats

To turn on the heated seats press the button. LED light will appear on the button indicating the heater is on

Press button off and it will turn off the heated seat

**HEATED SEATS ⇨ 23**

## Safety Belts

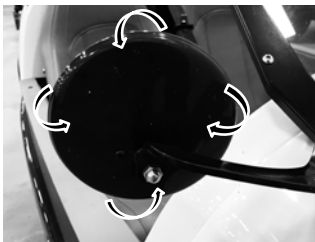


Refer to the following sections for important information on how to use safety belts properly:

**SAFETY BELTS ⇨ 24.**

**HOW TO WEAR SAFETY BELTS PROPERLY ⇨ 25.**

## Mirror Adjustment



The Mirrors are manually adjustable.

To adjust mirror:

1. Grasp mirror on the edge
2. Rotate to desired position

## Steering Wheel Adjustment



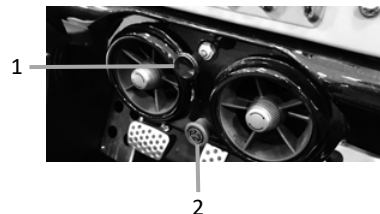
To adjust the steering wheel:

1. Pull the lever down.
2. Move the steering wheel up, down, forward, and backward.
3. Pull the lever up to lock the steering wheel in place.

Do not adjust the steering wheel while driving.

**SEE STEERING WHEEL ADJUSTMENT ⇨30**

## Climate Control



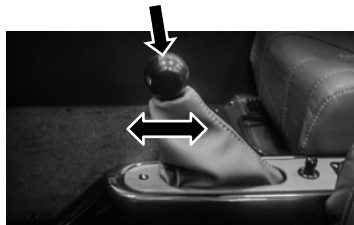
1. Temperature Control
2. Fan Speed Control

Pushing and pulling the Temperature control lever will raise and lower the temperature of the air exiting the Air Vents

The climate control fan has four speeds. These can be changed by turning the Fan Speed Control dial

**SEE CLIMATE CONTROL ⇨40**

## Transmission



Your Vanderhall Carmel is equipped with an automatic transmission. With the following pattern, starting at the forward most position.

- Park
- Reverse
- Neutral
- Drive
- Manual (if equipped)

**SEE TRANSMISSION ⇒ 58**

## Manual Mode

Manual Mode is an optional feature, if equipped. This feature allows you to manually select gears using the paddle shifter located on either side of Steering Wheel.



To activate Manual Mode

1. Push the shift lever down
2. Pull the shift lever from Drive to Manual
3. Pull the right paddle to upshift
4. Pull the left paddle to downshift

**SEE MANUAL MODE ⇒ 59.**

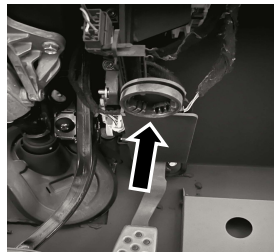
## Starting the Engine

1. Press the brake pedal
2. Push start button
3. Wait for gauge cycle to complete before shifting into gear



The vehicle has a Computer-Controlled Cranking System. It assists in starting the engine and protects components.

If the battery in the key fob is low, you may need to hold the fob against the antenna under the dash to the right of the steering wheel. Change the battery in the fob soon.



## Vehicle Features

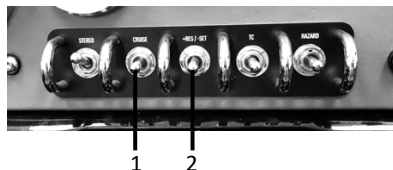
### Stereo Bluetooth® Audio

The Bluetooth® system allows users with a Bluetooth-enabled device to play audio on the vehicle speakers.

SEE BLUETOOTH ⇒ 42

## Cruise Control

Cruise Control is an optional feature. this section will describe its operation if it has been equipped.



- 1 Cruise Control Activation
- 2 Cruise Control Speed Adjust

**Cruise Control Activation:** Flip the switch to the up position to activate Cruise Control. Return the switch to the down position to deactivate Cruise Control

**Cruise Control Speed Adjust Up Position, (Resume/Accelerate):** If there is a set speed in memory, move the switch up briefly to resume to that speed or hold upward to accelerate. If cruise control is already active, use to increase vehicle speed.

**Cruise Control Speed Adjust Down Position, (Set/Coast):** Move the switch down briefly to set the speed and activate cruise control. If cruise control is already active, use to decrease speed.

SEE CRUISE CONTROL ⇒ 63.

## Power Outlet

The accessory power outlets can be used to plug in electrical equipment, such as a cell phone. The vehicle has an accessory power outlet in the accessory tray on the passenger side of dash.

**SEE POWER OUTLETS ⇒ 30**

## Trunk

To access the Trunk, slide either the driver or passenger seat forward.

## Performance

### Traction Control

The Traction Control System (TCS) limits wheel spin. The system is on when the vehicle is started.

- To turn off traction control, press and release the TCS button  in the accessory tray. The traction off light **TC** illuminates. Press and release the TCS button  again to turn traction control back on.

**SEE TRACTION CONTROL ⇒ 61**

# *Seats and Restraints*



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## **Seats and Restraints**

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      How to Wear Safety  
      Belts Properly

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      Shoulder Belt

26    Unlatching Lap and  
      Shoulder Belt

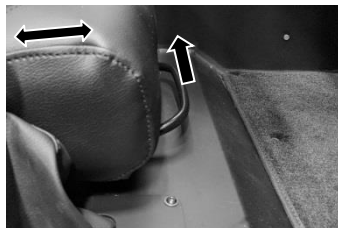


## Seats

### Seat Adjustment

#### ! Warning

You can lose control of the vehicle if you try to adjust a driver seat while the vehicle is moving. Adjust the driver seat only when the vehicle is not moving.



To adjust the seat:

1. Pull up on the handle at the front of the seat.

2. Slide the seat to the desired position and release the handle.
3. Try to move the seat back and forth to be sure it is locked in place.

### Heated Seats

#### ! Warning

If you cannot feel temperature change or pain to the skin, the seat heater may cause burns. To reduce the risk of burns, people with such a condition should use care when using the seat heater, especially for long periods of time. Do not place anything on the seat that insulates against heat, such as a blanket, cushion, cover, or similar item. This may cause the seat heater to overheat. An overheated seat heater may cause a burn or may damage the seat.

To turn the heated seats on, flip the toggle switch to the on position.

To turn the heated seats off, flip the toggle switch to the off position.

## Safety Belts

This section of the manual describes how to use safety belts properly. It also describes some things not to do with safety belts.

### **! Warning**

Do not let anyone ride where a safety belt cannot be worn properly. In a crash, if you or your passenger(s) are not wearing safety belts, injuries can be much worse than if you are wearing safety belts. You can be seriously injured or killed by hitting things inside the vehicle harder or by being ejected from the vehicle. In addition, anyone who is not buckled up can strike other passengers in the vehicle.

It is extremely dangerous to ride in a cargo area, inside or outside of a  
(Continued)

### **! Warning**

Vehicle. In a collision, passengers riding in these areas are more likely to be seriously injured or killed. Do not allow passengers to ride in any area of the vehicle that is not equipped with seats and safety belts.

Always wear a safety belt, and check that all passenger(s) are restrained properly too.

## Why Safety Belts Work



When riding in a vehicle, you travel as fast as the vehicle does. If the vehicle stops suddenly, you keep going until something stops you. It could be the windshield, the instrument panel, or the safety belts!

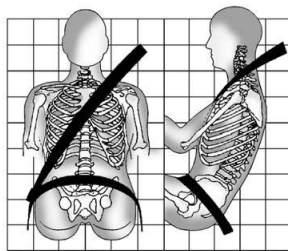
When you wear a safety belt, you and the vehicle slow down together. There is more time to stop because you stop over a longer distance and, when worn properly, your strongest bones take the forces from the safety belts. That is why wearing safety belts make such good sense.

## How to Wear Safety Belts Properly

This section is only for people of adult size. Follow those rules for everyone's protection.

It is very important for all occupants to buckle up. Statistics show that unbelted people are hurt more often in crashes than those who are wearing safety belts. There are important things to know about wearing a safety belt properly

- Sit up straight and always keep your feet on the floor in front of you.
- Always use the correct buckle for your seating position.



- Wear the lap part of the belt low and snug on the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones and you would be less likely to slide under the lap belt. If you slid under it, the belt would apply force on your abdomen. This could cause serious or even fatal injuries.
- Wear the shoulder belt over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces. The shoulder belt locks if there is a sudden stop or crash.

## ! Warning

You can be seriously injured, or even killed, by not wearing your safety belt properly.

- Never allow the lap or shoulder belt to become loose or twisted.
- Never wear the shoulder belt under both arms or behind your back.

## Securing Lap-Shoulder Belt

Both Driver and Passenger seats have a lap-shoulder belt. The following instructions explain how to wear a lap-shoulder belt properly.

1. Sit up straight
2. Grasp the latch plate and pull the belt across your body. Do not allow the belt to become twisted

3. If you pull rapidly the belt may lock. If this occurs allow the belt to retract slightly then continue pulling the belt across your body more slowly.
4. Push the latch plate in to the buckle until a click is heard
5. Pull on the latch plate to ensure it is secure.
6. To make the Lap Belt tight, pull up on the shoulder belt

### **Unlatching Lap and Shoulder Belt**

To unlatch the belt, press the red button on the buckle.  
The belt will then return to its stowed position.

# *Instruments & Controls*



## **Instruments and Controls**

### **Controls**

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42 Audio Controls



## Controls

### Steering Wheel Adjustment



To adjust the steering wheel:

1. Pull the lever down.
2. Move the steering wheel up, down, forward, and backward.
3. Pull the lever up to lock the steering wheel in place.

Do not adjust the steering wheel while driving.

## Horn



Press the Steering Wheel Pad to sound the horn

## Power Outlet

The accessory power outlets can be used to plug in electrical equipment, such as a cell phone. The vehicle has an accessory power outlet in the accessory tray on the passenger side of dash.

Remove the cover to access and replace when not in use.

### **! Warning**

Power is always supplied to the outlets. Do not leave electrical equipment plugged in when the vehicle is not in use because the vehicle could catch fire and cause injury or death.

**Caution**

Leaving electrical equipment plugged in for an extended period of time while the vehicle is off will drain the battery. Always unplug electrical equipment when not in use and do not plug in equipment that exceeds the maximum 20 amp rating.

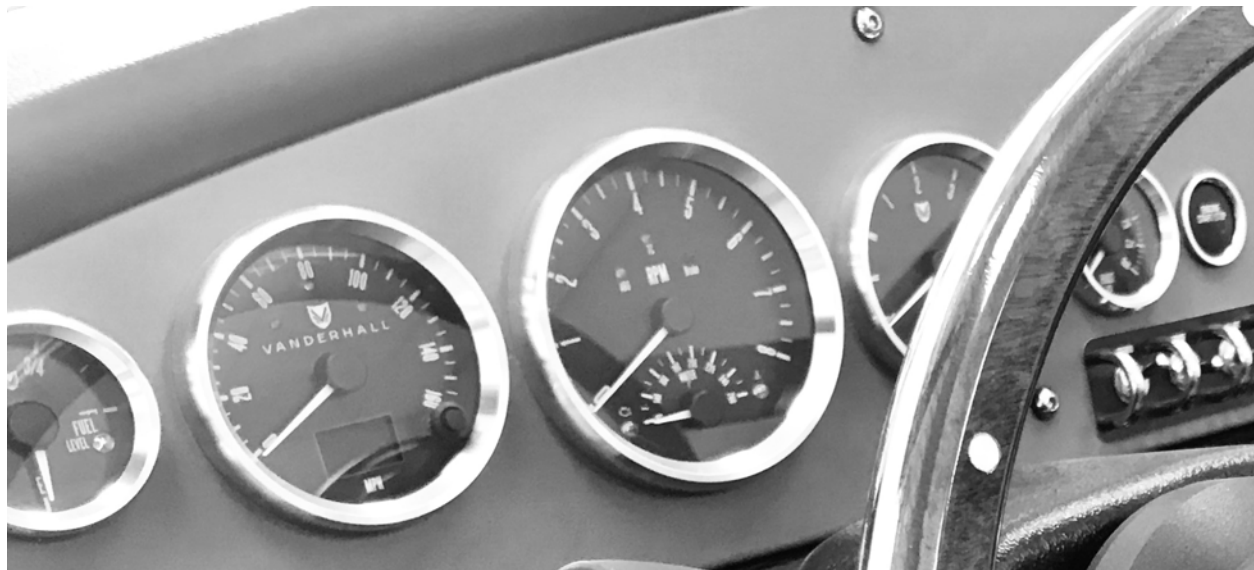
Certain accessory power plugs may not be compatible with the accessory power outlet and could overload vehicle or adapter fuses. If a problem is experienced, contact Vanderhall Service.

When adding electrical equipment, be sure to follow the proper installation instructions included with the equipment.

**Warning Lights, Gauges, and Indicators**

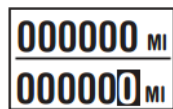
Warning lights and gauges can signal that something is wrong before it becomes serious enough to cause an expensive repair or replacement. Paying attention to the warning lights and gauges could prevent injury.

Some warning lights come on briefly when the engine is started to indicate they are working. When one of the warning lights comes on and stays on while driving, or when one of the gauges shows there may be a problem, check the section that explains what to do. Waiting to do repairs can be costly and even dangerous.



## Speedometer

The speedometer shows the vehicle's speed in miles per hour (mph).



Vehicle Odometer

Trip Odometer

## Vehicle Odometer

The odometer shows how far the vehicle has been driven, in miles.

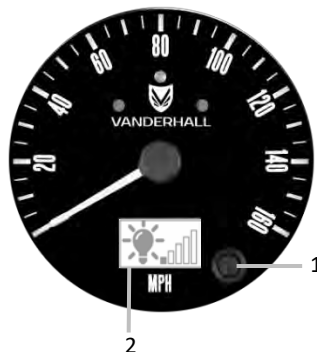
## Trip Odometer

The trip odometer shows how far the vehicle has been driven since the trip odometer was last reset.

Press and hold the button on the speedometer to reset the Trip Odometer to zero

## Dimming the Gauges

1. Press and hold trip meter button from odometer screen
2. Press trip meter button to cycle to desired brightness
3. Changes will be saved automatically with timeout



## Fuel Gauge



The fuel gauge indicates about how much fuel is left when the ignition is turned to ON/RUN. When the tank nears empty, the low fuel warning light (1) will come on. There is still a little fuel left, but the vehicle's fuel tank should be filled soon.

The Button (2) can be used to adjust the brightness of the low fuel indicator

### Malfunction Indicator Lamp (Check Engine Light)

This light is part of the vehicle's emission control on-board diagnostic system. If this light is on while the engine is running, a malfunction has been detected and the vehicle may require service.



Malfunctions are often indicated by the system before any problem is noticeable. Being aware of the light and seeking service promptly when it comes on may prevent damage

#### Caution

If the vehicle is driven continually with this light on, the emission control system may not work as well, the fuel economy may be lower, and the vehicle may not run smoothly. This could lead to costly repairs.

#### Caution

Modifications to the engine, transmission, exhaust, intake, or fuel system, or the use of replacement tires that do not meet the original tire specifications, can cause this light to come on. This could lead to costly repairs. This could also affect the vehicle's ability to pass an Emissions Inspection/ Maintenance test.

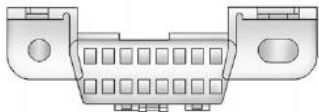
Check the following:

- A loose or missing fuel cap may cause the light to come on. **SEE FILLING THE TANK ⇒ 65.** A few driving trips with the cap properly installed may turn the light off.
- Poor fuel quality can cause inefficient engine operation and poor drivability, which may go away once the engine is warmed up. If this occurs, change the fuel brand. It may require at least one full tank of the proper fuel to turn the light off. **SEE FUEL ⇒ 65.**

If the light remains on, see your dealer.

## **Emissions Inspection and Maintenance Programs**

If the vehicle requires an Emissions Inspection/Maintenance test, the test equipment will likely connect to the vehicle's Data Link Connector (DLC).



The DLC is under the instrument panel to the right of the steering wheel. Connecting devices that are not used to perform an Emissions Inspection/Maintenance test or to service the vehicle may affect vehicle operation. Contact Vanderhall Service if assistance is needed

The vehicle may not pass inspection if:

- The check engine light is on when the engine is running.
- Critical emission control systems have not been completely diagnosed. If this happens, the vehicle would not be ready for inspection and might require several days of routine driving before the system is ready for inspection. This can happen if the 12-volt battery has recently been replaced or run down, or if the vehicle has been recently serviced.

• Contact Vanderhall Service if the vehicle will not pass or cannot be made ready for the test.

## Brake System Warning Light

The vehicle brake system consists of two hydraulic circuits. If one circuit is not working, the remaining circuit can still work to stop the vehicle. For normal braking performance, both circuits need to be working. If the warning light comes on, there is a brake problem. Have the brake system inspected right away.

### **! Warning**

The brake system might not be working properly if the brake system warning light is on. Driving with the brake system warning light on can lead to a crash. If the light is still on after the vehicle has been pulled off the road and carefully stopped, have the vehicle towed for service.

## Brake

This light should come on briefly when the ignition is turned to ON. If it does not come on then, have it fixed so it will be ready to warn if there is a problem.

When the ignition is on, the brake system warning light will also come on when the parking brake is set. The light will stay on if the parking brake does not fully release. If it stays on after the parking brake is fully released, it means there is a brake problem.

If the light comes on while driving, carefully pull off the road and stop. The pedal may be harder to push or may go closer to the floor. It may take longer to stop. If the light is still on, have the vehicle towed for service. **SEE TOWING THE VEHICLE**  
**⇒103**

## Antilock Brake System (ABS) Warning Light

### ABS

This light comes on briefly when the engine is started.

If the light stays on, turn the ignition to LOCK/OFF or if the light comes on, stop as soon as possible and turn the ignition off. Then start the engine again to reset the system. If the light still stays on, or comes on again while driving, the vehicle needs service. Contact Vanderhall Service. If the regular brake system warning light is not on, the brakes will still work, but the antilock brakes will not work. If the regular brake system warning light is also on, the antilock brakes will not work and there is a problem with the regular brakes. **SEE BRAKE SYSTEM WARNING LIGHT ⇒ 37.**

The ABS warning light will come on briefly when the ignition is turned to ON/RUN. This is normal. If the light does not come on then, have it fixed so it will be ready to warn if there is a problem.

## Traction off Light

### TC

This light comes on briefly while starting the engine. If it does not, have the vehicle serviced by your dealer. If the system is working normally, the indicator light then turns off.

The traction off light comes on when the Traction Control System (TCS) has been turned off by pressing and releasing the TCS button.

If the TCS is off, wheel spin is not limited. Adjust driving accordingly.

**SEE TRACTION CONTROL ⇒ 61.**



## Traction Control System (TC) Light

### TC

The Traction Control System (TC) indicator/warning light comes on briefly when the engine is started.

If the light does not come on, contact Vanderhall Service. If the system is working normally, the indicator light turns off.

If the light is on and not flashing, the TC, may have been disabled.

If the indicator/warning light is on and flashing, the TCS system is actively working.

**SEE TRACTION CONTROL CONTROL ⇨ 61.**

## High-Beam On Light



The High-Beam Indicator (1) comes on when the high-beam headlamps are in use.

**SEE HEADLAMP HIGH/LOW-BEAM CHANGER**  
**⇨ 46.**

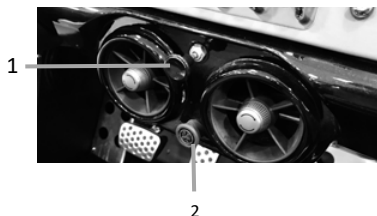
## Cruise Control Symbol

For vehicles with cruise control, the cruise control symbol appears in the odometer LCD screen when the cruise control is armed, and indicates speed when the cruise control is set and active.

The symbol turns off when the cruise control is turned off.

**SEE CRUISE CONTROL ⇨ 63.**

## Climate Control Systems



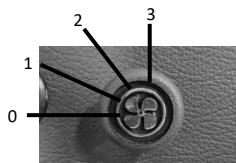
The climate control systems control the heating, cooling, and ventilation for the vehicle.

1. Temperature Control
2. Fan Control

### Climate Control Interface

**Temperature Control:** Push or pull to increase or decrease the temperature.

 **(Fan Control)** : Turn clockwise or counterclockwise to increase or decrease the fan speed.



0. Fan Off
1. Low Speed
2. Medium Speed
3. High Speed

### Air Vents

Use the air vents located in the center of the dash to direct the airflow. Move the slats on the center air vents to direct airflow. Turn the knobs on the side air vents counterclockwise or clockwise to open or close off the airflow

## Heated Seats

To turn the heated seats on, flip the toggle switch to the on position.

To turn the heated seats off, flip the toggle switch to the off position.



## Bluetooth Audio

### Introduction

The vehicle is equipped with a Bluetooth® receiver that can be used for playing audio tracks.

#### **! Warning**

Taking your eyes off the road for too long or too often while using any radio feature can cause a crash. You or others could be injured or killed. Do not give extended attention to the radio controls or Bluetooth audio devices while driving. Limit your glances at the vehicle displays and focus your attention on driving.

### Pairing Devices

1. Set the ignition button to Accessory or Run  
**SEE IGNITION POSITIONS ➔ 54**
2. Set farthest left toggle to up position
3. Go to settings on your device. Turn on Bluetooth and search for WW-BT-VC.
4. Select WW-BT-VC to pair your device
5. Once a device is paired to the vehicle it will automatically reconnect to your device.
6. If there is no device for the vehicle to connect to, it will automatically go into pairing mode to connect with another device.
7. If pairing is unsuccessful "forget" user phone and start over

### Audio Controls

Set farthest left toggle to up position



Play music: Tap knob once



Pause music: Tap knob once to pause, tap again to resume playing



Skip one track forward: Turn the knob clockwise



Skip one track back: Turn the knob counter-clockwise



Adjust volume up: Turn and hold the knob clockwise



Adjust volume down: Turn and hold the knob counter-clockwise

See your cell phone manufacturer's user guide for Bluetooth functions before pairing the cell phone.

*Lighting*



## Lighting

### Exterior Lighting

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  - Headlamp High/  
Low-Beam Changer
- 46 Momentary High Beams
- 46 Hazard Warning Flash
  - Turn And Lane Change
- 48 Signals

### Lighting Features

- 48 Battery Load Management
- 49 Battery Power Protection
  
- 49 Exterior Lighting
- 49 Battery Saver



## Exterior Lighting

### Headlamps

The Headlamps are turned on automatically at normal brightness when the vehicle is running.

### Headlamp High/ Low-Beam Changer



**(Headlamp High/Low-Beam Changer):** Push the turn signal lever away from you to turn the high beams on. Push the lever again or pull the lever toward you to return to low beams.

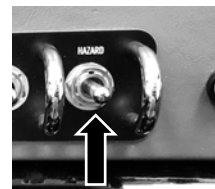


This indicator light turns on in the instrument cluster when the high-beam headlamps are on.

### Momentary High Beams/

To momentary activate the high beams; pull the turn signal lever all the way toward you. The release it.

### Hazard Warning Flashers



**(Hazard Warning Flasher) :**

Press and momentarily hold this button to make the front and rear turn signal lamps flash on and off. This warns others that you are having trouble. Press and momentarily hold again to turn the flashers off.



## Turn and Lane-Change Signals



Move the lever all the way up or down to signal a turn.

A light on either side of the Vanderhall Logo in the speedometer will flash in the direction of the turn or lane change.

Raise or lower the lever until the light starts to flash to signal a lane change. Hold it there until the lane change is completed. If the lever is briefly pressed and released, the turn signal flashes three times.

The lever returns to its neutral position when it is released.

If after signaling a turn or lane change the arrow flashes rapidly or does not come on a fuse may have failed. [SEE FUSES AND CIRCUIT BREAKERS ➔ 88](#)

## Lighting Features

### Battery Load Management

The vehicle has Electric Power Management (EPM) that estimates the battery's temperature and state of charge. It then adjusts the voltage for best performance and extended life of the battery.

When the battery's state of charge is low, the voltage is raised slightly too quickly bring the charge back up. When the state of charge is high, the voltage is lowered slightly to prevent overcharging.

The battery can be discharged at idle if the electrical loads are very high. This is true for all vehicles. This is because the alternator may not be spinning fast enough at idle to produce all the power needed for very high electrical loads.

A high electrical load occurs when several of the following are on, such as: headlamps, high beams, climate control fan at high speed, heated seats, engine cooling fans, and loads plugged into accessory power outlets.

EPM works to prevent excessive discharge of the battery. It does this by balancing the generator's output and the vehicle's electrical needs. It can increase engine idle speed to generate more power, whenever needed. It can temporarily reduce the power demands of some accessories.

Normally, these actions occur in steps or levels, without being noticeable. In rare cases at the highest levels of corrective action, this action may be noticeable to the driver.

### **Battery Power Protection**

The battery saver feature is designed to protect the vehicle's battery.

### **Exterior Lighting Battery Saver**

The exterior lamps turn off about 10 minutes after the ignition is turned off

To keep the lamps on for more than 10 minutes, the ignition must be in the ACC/ACCESSORY or ON/RUN position.





*Driving & Operation*

## **Driving and Operation**

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## New Vehicle Break-In

### Caution

The vehicle does not need an elaborate break-in. But it will perform better in the long run if you follow these guidelines:

- Do not drive at a constant speed, fast or slow, for the first 805 km (500 mi). Do not make full-throttle starts.
- Avoid making hard stops for the first 322 km (200 mi) or so. During this time the new brake linings are not yet broken in. Hard stops with new linings can cause premature wear and sooner replacement. This breaking-in guideline should be followed

## Ignition Positions



1. For accessories on position, press start button once or hold until gauges turn on.
2. Push and hold to start engine button while pressing brake.

To shift out of P (Park), the ignition must be in ON/RUN and the brake pedal applied.

### **0 (STOPPING THE ENGINE/LOCK/ OFF) :**

When the vehicle is stopped, hold the button until the engine is off.

Do not turn the engine off when the vehicle is moving. This will cause a loss of power assist in the brake and steering systems

If the vehicle must be shut off in an emergency:

1. Brake using a firm and steady pressure. Do not pump the brakes repeatedly. This may deplete power assist, requiring increased brake pedal force.
2. Shift the vehicle to N (Neutral). This can be done while the vehicle is moving. After shifting to N (Neutral) firmly apply the brakes and steer the vehicle to a safe location.
3. Come to a complete stop. Shift to P (Park). Hold button until ignition is off.
4. Set the parking brake. SEE PARKING BRAKE ⇒ 60.

If the vehicle cannot be pulled over, and must be shut off while driving, set the ignition button to ACC/ ACCESSORY.

### **! Warning**

Turning off the vehicle while moving may cause loss of power assist in the brake and steering systems. While driving, only shut the vehicle off in an emergency.

### **! Warning**

Shifting out of park before gauges have completed their sweep cycle will shut off the engine. To restart use the following process:

1. Shift back into park
2. Release foot from brake
3. Press start button until all light are cleared
4. Wait one minute
5. Repeat starting procedure

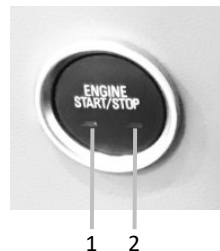
**(ACC/ACCESSORY):** This is the position in which things like the radio and the heated seats can be operated when the engine is off.

1. Left Light amber and is on when in (ACC/ACCESSORY) is on.

**(ON/RUN):** This position can be used to operate the electrical accessories and to display some instrument cluster warning and indicator lights. This position can also be used for service and diagnostics, and to verify the proper operation of the malfunction indicator lamp as may be required for emission inspection purposes. The switch stays in this position when the engine is running.

2. Green light is on when vehicle is running.

ACC/ ACCESSORY or ON/RUN position with the engine off, the battery could be drained. You may not be able to start the vehicle if the battery is allowed to drain for an extended period of time.



**Caution**

Do not try to shift to P (Park) if the vehicle is moving. If you do, you could damage the transmission. Shift to P (Park) only when the vehicle is stopped.

**Retained Accessory Power (RAP)**

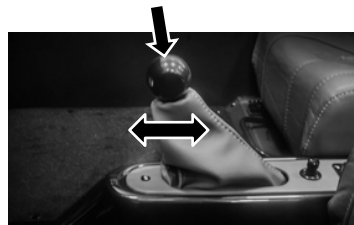
These vehicle accessories may be used for up to 10 minutes after the engine is turned off:

- . Heated Seats
- . Power Outlet

**! Warning**

Shifting out of park before gauges have completed their sweep cycle will shut off the engine. To restart use the following process:

1. Shift back into park
2. Release foot from brake
3. Press start button until all light are cleared
4. Wait one minute
5. Repeat starting procedure

**Shifting out of Park**

This vehicle is equipped with a shift lock control. The shift lock control is designed to; Prevent movement of the shift lever out of P (Park) unless the ignition is in ON/RUN and the brake pedal is applied.

The shift lock control is always functional except in the case of an uncharged or low voltage (less than 9-volt) battery. If the vehicle has an uncharged battery or a battery with low voltage, try charging or jump starting the battery.

To shift out of P (Park):

1. Apply the brake pedal.
2. Set the ignition button to ON/RUN.
3. Press down on the shift lever
4. Move the shift lever to the desired position.

**Shifting Into Park**

1. Hold the brake pedal down and set the parking brake. SEE PARKING BRAKE ⇨ 60.
2. Move the shift lever into P (Park) by pressing down on the shift lever and pushing the lever all the way toward the front of the vehicle.
3. Set the ignition button to OFF.



## Torque Lock

If you are parking on a hill and you do not shift the transmission into P (Park) properly, the weight of the vehicle may put too much force on the parking pawl in the transmission. You may find it difficult to pull the shift lever out of P (Park). This is called “torque lock.” To prevent torque lock, set the parking brake and then shift into P (Park) properly before you leave the driver seat. To find out how, see “Shifting Into Park” previously in this section.

When you are ready to drive, move the shift lever out of P (Park) before you release the parking brake.

If torque lock does occur, you may need to push the vehicle a little uphill to take some of the pressure from the parking pawl in the transmission, so you can pull the shift lever out of P (Park).

## Transmission

### Automatic Transmission



Your Vanderhall Carmel is equipped with an automatic transmission.

**P (Park):** In Park the front wheels are locked. Use this position when starting the engine or exiting the vehicle, because it will prevent the vehicle from moving.

The vehicle has a shift lock out. You must fully apply the brake pedal then press the shift lever down before you can move from P (Park) while the ignition is set to ON/RUN.

### ! Warning

It is dangerous to get out of the vehicle if the shift lever is not fully in P (Park) and the parking brake firmly set. As the vehicle could roll.

Do not leave the vehicle when the engine is running. The vehicle could move suddenly, injuring you or others.

To be sure the vehicle will not move always set the parking brake and move the shift lever to P (Park).

**R (Reverse):** Use this gear to back up.

| Caution                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Shifting to R (Reverse) while the vehicle is moving forward could damage the transmission. Shift to R (Reverse) only after the vehicle is stopped. |

**N (Neutral):** In this position, the engine is isolated from the front wheels. To restart the engine when the vehicle is already moving, use N (Neutral) only.

Use N (Neutral) if the vehicle is being towed.

**D (Drive) :** This position is for normal driving.

### Manual Mode

Manual Mode is an optional feature, if equipped. This feature allows you to manually select gears using the paddle shifter located on either side of Steering Wheel.



To activate Manual Mode

1. Push the shift lever down
2. Pull the shift lever from Drive to Manual
3. Pull the right paddle to upshift
4. Pull the left paddle to downshift

While using manual mode, the transmission will have firmer shifting and sportier performance. This setting can be used for sport driving.

The transmission will only allow you to shift into gears appropriate for the current vehicle speed and engine revolutions per minute (rpm):

- The transmission will not automatically shift to the next higher gear if the vehicle speed or engine rpm is too low.
- The transmission will not allow shifting to the next lower gear if the vehicle speed or engine rpm is too high.

## Brakes

### Antilock Brake System (ABS)

This vehicle has ABS, a system that helps prevent a braking skid.

When the vehicle begins to drive, the ABS will perform a self-check. A momentary motor or clicking noise might be heard during the test, and it might even be noticed that the brake pedal moves a little. This is normal.



If there is a problem with ABS, this warning light stays on. **SEE ANTILOCK BRAKE SYSTEM (ABS) WARNING LIGHT ⇒38.**

The ABS system monitors wheel speed and braking pressure at each wheel. If while braking the system senses a wheel is about to stop rolling the computer will work each brake, while the driver maintains braking pressure.

ABS can change the brake pressure to each wheel, as required, faster than any driver could. This can help you steer around the obstacles while braking hard.

**Remember:** ABS does not change the time needed to get a foot up to the brake pedal or always decrease stopping distance. If you get too close to the vehicle in front of you, there will not be enough time to apply the brakes if that vehicle suddenly slows or stops. Always leave enough room up ahead to stop, even with ABS.

### Using ABS

Do not pump the brakes. Just hold the brake pedal down firmly and let ABS work. You may hear the ABS pump or motor operating and feel the brake pedal pulsate. This is normal.

### Braking in Emergencies

ABS allows you to steer and brake at the same time. In many emergencies, steering can help more than even the very best braking.

### Parking Brake



To set the parking brake, hold the brake pedal down and pull up on the parking brake lever. If the ignition is on, the brake system warning light will come on. SEE **BRAKE SYSTEM WARNING LIGHT 37**

To release the parking brake, hold the brake pedal down. Pull the parking brake lever up until you can press the release button. Hold the release button in as you move the brake lever all the way down.

### Caution

Driving with the parking brake on can overheat the brake system and cause premature wear or damage to brake system parts. Make sure that the parking brake is fully released and the brake warning light is off before driving.

## Vehicle Control Systems

### Traction Control

#### System Operation

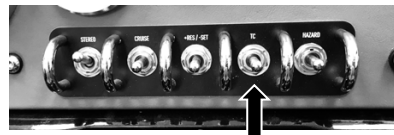
The vehicle has a Traction Control System (TCS) which is designed to limit wheel slip. TCS activates if it senses that any of the drive wheels are spinning or beginning to lose traction. When this happens, TCS applies the brakes to the spinning wheels and reduces engine power to limit wheel spin.

If cruise control is being used and the TCS becomes active, the cruise control system will disengage. Cruise control may be turned back on when road conditions allow.

The TCS systems come on automatically when the vehicle is started and begins to move. The systems may be heard or felt

This is normal and does not mean there is a problem with the vehicle.

### Turning the System Off and On



The TCS button is located on the passenger side of the dash

To turn off TCS, press and release the  button. The traction off light **TC** displays in the instrument cluster.

To turn TCS on again, press and release the  button. The traction off light **TC** displayed in the instrument cluster will turn off.

If TCS is limiting wheel spin when the  button is pressed, the system will not turn off until the wheels stop spinning.

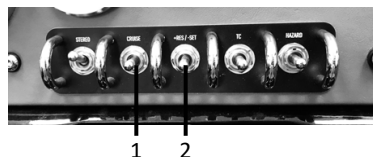


## Cruise Control

If this vehicle is equipped with a cruise control system. The system will allow the vehicle to maintain a speed of about 25MPH (40 km/h) or more. Without the driver keeping their foot on the accelerator pedal.

If the vehicles Traction Control System (TSC) begins limiting wheel slip the cruise control will disengage.

If the brakes are applied, the cruise control system will disengage.



- 1 Cruise Control Activation
- 2 Cruise Control Speed Adjust

### Setting Cruise Control:

To set cruise control:

1. Flip switch one up to turn the cruise system on.
2. Bring the vehicle to the speed desired.
3. Flip Switch 2 down and release it to set the speed.
4. Take your foot off the accelerator pedal.

**Cruise Control Cancellation:** Flip switch 1 down to deactivate Cruise Control or press brake.

**Cruise Control Speed Adjust Down Position, (Set/Coast):** Flip switch down briefly to set the speed and activate cruise control. If cruise control is already active, use to decrease speed.

**Cruise Control Speed Adjust Up Position (Resume/Accelerate) ::** If there is a set speed in memory, flip the switch up briefly to resume to that speed or hold upward to accelerate. If cruise control is already active, use to increase vehicle speed.



**Fuel**

Use of the recommended fuel is an important part of the proper maintenance of this vehicle. Use regular unleaded gasoline with a posted octane rating of 91 or higher. Do not use gasoline with an octane rating below 91, as it may cause engine damage and will lower fuel economy

**Prohibited Fuels**

Gasolines containing oxygenates such as ethers and ethanol, as well as reformulated gasolines, are available in some cities. If these gasolines comply with the previously described specification, then they are acceptable to use. However, E85 (85% ethanol) and other fuels containing more than 15% ethanol must not be used in this vehicle

| Caution                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------|
| Do not use fuel containing methanol. It can corrode metal parts in the fuel system and also damage plastic and rubber parts. |

Some gasolines, mainly high octane racing gasolines, can contain an octane-enhancing additive called methylcyclopentadienyl manganese tricarbonyl (MMT). Do not use gasolines and/or fuel additives with MMT as they can reduce spark plug life and affect emission control system performance. The malfunction indicator lamp may turn on. If this occurs, contact Vanderhall Service.

**Filling the Tank**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>! Warning</b></p> <p>Fuel vapors and fuel fires burn violently and can cause injury or death.</p> <ul style="list-style-type: none"><li>• To help avoid injuries to you and others, read and follow all the instructions on the fuel pump island.</li><li>• Turn off the engine when refueling.</li><li>• Keep sparks, flames, and smoking materials away from fuel.</li><li>• Do not leave the fuel pump unattended.</li><li>• Do not use a cell phone while refueling.</li><li>• Do not reenter the vehicle while pumping fuel.</li><li>• Keep children away from the fuel pump and never let children pump fuel.</li></ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### ! Warning (Continued)

- Fuel can spray out if the fuel cap is opened too quickly. This spray can happen if the tank is nearly full, and is more likely in hot weather. Open the fuel cap slowly and wait for any hiss noise to stop then unscrew the cap all the way.



The Fuel fill is located in the tail of the vehicle,

To remove the fuel cap, turn it slowly counterclockwise. The fuel cap has a spring in it; if the cap is released too soon, it will spring back to the right.

When filling the vehicle keep the flow from the fuel nozzle slow. Typically squeezing the lever halfway works best to prevent overflow

Do not use the automatic fuel flow shutoff feature on many nozzles, as this can lead to fuel spillage

Be careful not to spill fuel. Do not top off or overfill the tank. Wait a few seconds after you have finished pumping before removing the nozzle.

### ! Warning

Overfilling the fuel tank may cause:

- Vehicle performance issues, including engine stalling and damage to the fuel system.
- Fuel spills.
- Potential fuel fires

Clean fuel from painted surfaces as soon as possible. SEE "WASHING THE VEHICLE" IN EXTERIOR CARE ➔98.

When replacing the fuel cap, turn it clockwise until it clicks. Ensure the cap is fully installed. The diagnostic system can determine if the fuel cap has been left off or improperly installed. Allowing fuel to evaporate into the atmosphere. SEE MALFUNCTION INDICATOR LAMP (CHECK ENGINE LIGHT) ➔34.





*Vehicle Cane*

## Vehicle Care

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**General Information**

For service and parts contact Vanderhall service for the highest quality replacement parts.

**California Proposition 65 Warning**

**WARNING:** Most motor vehicles, including this one, contain and/or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Engine exhaust, many parts and systems, many fluids, and some component wear by-products contain and/or emit these chemicals.

**California Perchlorate Materials Requirements**

Certain types of automotive Applications such as lithium batteries contained in Remote Keyless Entry transmitters, may contain perchlorate materials. Special handling may be necessary. For additional information, see [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)

**Accessories and Modifications**

Adding non-dealer accessories or making modifications to the vehicle can affect vehicle performance and safety, including such things as braking, stability, ride and handling, emissions systems, aerodynamics, durability, and electronic systems like antilock brakes, traction control, and stability control. These accessories or modifications could even cause malfunction or damage

**Engine Compartment Overview (See page 11 for hood operation)**

1. Engine Oil Fill Cap
2. Engine Oil Dipstick
3. Engine Air Filter
4. Brake Fluid Reservoir
5. Positive Battery Post
6. Fuse box
7. Negative Ground
8. Engine Coolant Surge Tank and Pressure Cap

## Engine Oil

To ensure proper engine performance and long life, careful attention must be paid to engine oil. Following these simple, but important steps will help protect your investment:

- Always use engine oil approved to the proper specification and of the proper viscosity grade. See “Selecting the Right Engine Oil” in this section.
- Check the engine oil level regularly and maintain the proper oil level. See “Checking Engine Oil” and “When to Add Engine Oil” in this section.
- Change the engine oil at the appropriate time.
- Always dispose of engine oil properly. See “What to Do with Used Oil” in this section

## Checking Engine Oil

It is a good idea to check the engine oil level monthly when the vehicle is in usage. In order to get an accurate reading, the oil must be warm and the vehicle must be on level ground. The engine oil dipstick handle is a loop. **SEE ENGINE COMPARTMENT OVERVIEW ➔ 72** for the location of the engine oil dipstick.

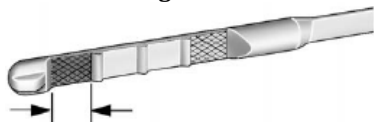
1. If the engine has been running recently, turn off the engine and allow several minutes for the oil to drain back into the oil pan. Checking the oil level too soon after engine shutoff will not provide an accurate oil level reading.

## **! Warning**

The engine oil dipstick handle may be hot; it could burn you. Use a towel or glove to touch the dipstick handle.

2. Pull out the dipstick and wipe it with a clean paper towel or cloth, then push it back in all the way. Remove it again, keeping the tip down, and check the level.

## When to Add Engine Oil



If the oil is below the minimum mark on the dipstick, add 1 qt (1 L) of the recommended oil and then recheck the level. See “Selecting the Right Engine Oil” in this section for an explanation of what kind of oil to use. For engine oil crankcase capacity, **SEE CAPACITIES AND SPECIFICATIONS ⇒ 113.**

**SEE ENGINE COMPARTMENT OVERVIEW ⇒ 72** for the location of the engine oil fill cap.

Add enough oil to put the level somewhere in the proper operating range. Push the dipstick all the way back in when through.

### Caution

Do not add too much oil. Oil levels above or below the acceptable operating range shown on the dipstick are harmful to the engine. If you find that you have an oil level above the operating range, i.e., the engine has so much oil that the oil level gets above the upper mark that shows the proper operating range, the engine could be damaged. You should drain out the excess oil or limit driving of the vehicle and seek a service professional to remove the excess amount of oil.

## Selecting the Right Engine Oil

Selecting the Right Engine oil depends on getting the correct viscosity grade. **SEE RECOMMENDED FLUIDS AND LUBRICANTS ⇒ 111.**

## Viscosity Grade

Use SAE 0W-20 viscosity grade engine oil.

## Engine Oil Additives/Engine Oil Flushes

Do not add anything to the oil. Engine oil system flushes are not recommended and could cause engine damage.

## When to Change Engine Oil

The engine oil and filter must be changed at least once a year and, Your dealer has trained service people who will perform this work. It is also important to check the oil regularly over the course of an oil drain interval and keep it at the proper level.



## Automatic Transmission Fluid

### How to Check Automatic Transmission Fluid

It is not necessary to check the transmission fluid level. A transmission fluid leak is the only reason for fluid loss. If a leak occurs, contact Vanderhall Service as soon as possible.

There is a special procedure for checking and changing the transmission fluid. Because this procedure is difficult, you should have this done by a professional. Change the fluid at the intervals listed in **MAINTENANCE SCHEDULE ⇒ 107**, and be sure to use the fluid listed in

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**RECOMMENDED FLUIDS AND LUBRICANTS ⇒ 111.**

## Engine Air Filter

The engine air filter is located at the center rear of the engine compartment. **SEE ENGINE COMPARTMENT OVERVIEW ⇒ 72**

### When to Inspect the Engine Air Cleaner/Filter

For intervals on changing and inspecting the engine air filter, **SEE MAINTENANCE SCHEDULE ⇒ 107**

### How to Inspect the Engine Air Filter

Do not start the engine or have the engine running without the engine air filter. Remove the engine air filter. Lightly tap and shake the engine air filter (away from the vehicle), to release loose dust and dirt. Inspect the engine air filter for damage, replace if damage is found. Replace if dust and dirt is not easily removed.

## Engine Coolant

The cooling system in the vehicle is filled with DEX-COOL engine coolant. This coolant is designed to remain in the vehicle for 5 years or 150,000 mi (240 000 km), whichever occurs first.

The following explains the cooling system and how to check and add coolant when it is low. If there is a problem with engine overheating, **SEE ENGINE OVERHEATING ⇒ ERROR! BOOKMARK NOT DEFINED..**

Use a 50/50 mixture of clean drinkable water and DEX-COOL coolant. This mixture:

- Gives freezing protection down to -34 °F (-37 °C), outside temperature.
- Gives boiling protection up to 265 °F (129 °C), engine temperature.
- Protects against rust and corrosion.
- Will not damage aluminum parts.

- Helps keep the proper engine temperature.

### **! Warning**

Adding only plain water or some other liquid to the cooling system can be dangerous. Plain water and other liquids, can boil before the proper coolant mixture will. The coolant warning system is set for the proper coolant mixture. With plain water or the wrong mixture, the engine could get too hot but you would not get the overheat warning. The engine could catch fire and you or others could be burned. Use a 50/ 50 mixture of clean, drinkable water and DEX-COOL coolant.

### **Caution**

If improper coolant mixture, inhibitors, or additives are used in the vehicle cooling system, the engine could overheat and be damaged. Too much water in the mixture can freeze and crack engine cooling parts. Use only the proper mixture of engine coolant for the cooling system. SEE RECOMMENDED FLUIDS AND LUBRICANTS ⇨ 111.

### **Checking Coolant**

The vehicle must be on a level surface when checking the coolant level

It is normal to see coolant moving in the upper coolant hose return line when the engine is running.

If the engine has been recently running even for a short time. The coolant in the cooling system could be very hot and under

pressure. Allow the engine to cool completely before attempting to open the surge tank

If coolant is visible but the coolant level is not at or above the mark pointed to, add a 50/50 mixture of clean drinkable water and DEX-COOL coolant.

If no coolant is visible in the coolant surge tank, add coolant as follows:

### **How to Add Coolant to the Coolant Surge Tank**

### **Caution**

This vehicle has a specific coolant fill procedure. Failure to follow this procedure could cause the engine to overheat and be severely damaged.

If no coolant is visible in the coolant surge tank, or it is visible but the level is not at the indicated level mark. Add a 50/ 50 mixture of clean, drinkable water and DEX-COOL coolant to the coolant surge tank. Before attempting to open the surge tank be sure the cooling system, including the coolant surge tank pressure cap, is cool to the touch.

### **! Warning**

You could be badly burned by steam and scalding liquids blowing out of the system. Never turn the cap when the cooling system, including the surge tank pressure cap, is hot. Wait for the cooling system and surge tank pressure cap to cool before doing any work.

Coolant contains ethylene glycol and it can burn if spilled on hot engine parts. Do not allow coolant to spill on hot

### **! Warning**

Adding only plain water or some other liquid to the cooling system can be dangerous. Plain water and other liquids, can boil before the proper coolant mixture will. The coolant warning system is set for the proper coolant mixture. With plain water or the wrong mixture, the engine could get too hot but you would not get the overheat warning. The engine could catch fire and you or others could be burned. Use a 50/ 50 mixture of clean, drinkable water and DEX-COOL coolant.

### **Caution**

In cold weather, water in the cooling system can freeze and crack the engine, and cooling system parts. Use the recommended coolant and the proper coolant mixture, even when the vehicle is in storage.



1. When the cooling system is cool to the touch Remove the coolant surge tank pressure cap.
2. Turn the pressure cap counterclockwise slowly about one-quarter of a turn. If you hear a hiss, wait for the hiss to stop. This will allow any pressure in the system be vented out the discharge hose.
3. Fill the coolant surge tank to the indicated level mark with the proper DEX-COOL coolant mixture.



1. With the coolant surge tank pressure cap off, start the engine and let it run until you can feel the upper radiator hose getting hot. Keep your hands clear of the engine cooling fan.
2. The coolant level inside the coolant surge tank may drop below the level mark while the engine is running. If the level does drop, add more of the proper DEX-COOL coolant

mixture to the coolant surge tank until the level reaches the indicated level mark.

3. Replace the pressure cap tightly.
4. Check the level in the coolant surge tank when the cooling system has cooled down. If the coolant is not at the proper level, repeat Steps 1– 3 and reinstall the pressure cap. If the coolant still is not at the proper level when the system cools down again, contact Vanderhall Service.

#### Caution

Ensure the pressure cap is fully tightened. If it is not coolant loss and engine damage may occur.

## Engine Overheating

### If Steam Is Coming from the Engine Compartment

#### ! Warning

Steam from an overheated engine can burn you badly, even if you just open the hood. Stay away from the engine if you see or hear steam coming from it. Just turn it off and get everyone away from the vehicle until it cools down. Wait until there is no sign of steam or coolant before you open the hood.

If you keep driving when the engine is overheated, the liquids in it can catch fire. You or others could be badly burned. Stop the engine if it overheats, and get out of the vehicle until the engine is cool.



### If No Steam Is Coming from the Engine Compartment

Sometimes the engine can overheat when the vehicle:

- Climbs a long hill on a hot day.
- Stops after high-speed driving.

If the vehicle begins to overheat:

1. Turn the air conditioning off.
2. Turn the heater on to the highest temperature and to the highest fan speed.
3. When it is safe to do so, pull off the road, shift to P (Park) and let the engine idle for about 3 minutes.

If the overheat warning is no longer present, the vehicle can be driven. However drive the vehicle gently for about 10 minutes. If the warning does not come back on, the vehicle can be driven normally. Have the cooling system checked for proper fill and function.

If the warning is still displayed, turn off the engine and wait for it to cool down.

If the warning continues, pull over, stop, and park the vehicle right away.

### Brakes

Disc brake pads have built-in wear indicators that make a high-pitched warning sound when the brake pads need to be replaced. The sound can come and go or it may be heard all the time when the vehicle is moving.

#### ! Warning

The brake wear warning sound means that soon the brakes will not work well. When the brake wear warning sound is heard, have the vehicle serviced.

Failure to replace the brake pads could lead to a crash or costly brake system repairs.

Some driving conditions or climates can cause a brake squeal when the brakes are first applied or lightly applied. This may be noticed the first few stops after storing the vehicle. This does not mean something is wrong with the brakes.

### Brake Pedal Travel

The following conditions could indicate brake service is required. Contact Vanderhall Service if:

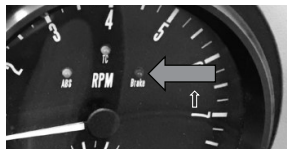
- The brake pedal does not return to normal height
- There is a rapid increase in pedal travel
- The pedal lacks firmness.

## Replacing Brake System Parts

The brakes may not work properly, or with the same performance if un-approved parts are used or parts are improperly installed.

Always replace brake system parts with new, approved replacement parts. And ensure the work is done by qualified mechanics.

## Brake Fluid



The brake master cylinder reservoir is filled with DOT 3 brake fluid as indicated on the reservoir cap. **SEE ENGINE COMPARTMENT OVERVIEW ⇒ 72** for the location of the reservoir.

- Normal brake pad wear. This will be corrected when new pads are installed, and is not an indication that the system needs repair.
- A fluid leak in the brake hydraulic system. Have the brake hydraulic system repaired. With a leak in the system the brakes will not perform well.

Always clean the brake fluid reservoir cap and the area around the cap before removing it.

Do not top off the brake fluid. If fluid is added when the pads are worn, there will be too much fluid when new brake pads are installed.

## ! Warning

If too much brake fluid is added, it may spill on the engine and burn, if the engine is hot enough. Potentially burning you or other and damaging the vehicle. Brake fluid should only be added when work is done on the brake hydraulic system.

There are only two reasons why the brake fluid level in the reservoir might be low: When the brake fluid falls to a low level, the brake warning light will come on. SEE **BRAKE SYSTEM WARNING LIGHT** ⇒ 37.

Brake fluid absorbs water over time. Replace brake fluid at the specified intervals to maintain optimal brake performance. SEE **MAINTENANCE SCHEDULE** ⇒ 107.

### **What to Add**

Use only DOT 3 brake fluid from a clean, sealed container. SEE **RECOMMENDED FLUIDS AND LUBRICANTS** ⇒ 111.

cap and area around the brake reservoir before opening.

### **Caution**

Brake fluid will damage painted surfaces. Immediately wash any area that brake fluid is spilled on.

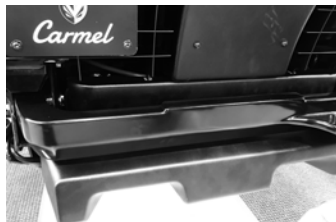
### **! Warning**

Using the wrong or contaminated brake fluid could result in damage to the brake system. This could lead to the loss of braking and possible injury. Always use the proper brake fluid from a clean sealed container, and clean the

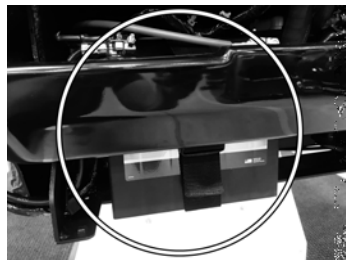


## Battery

The battery is located in its own compartment. This compartment can be accessed by removing the rear diffuser



Picture below shows battery behind the swingarm with the diffuser removed



## Battery Disconnect

The battery disconnect is located behind the seat in the trunk on the driver's side. It is not visibly accessible.



With the driver's in it's most forward position, standing outside the vehicle, reach into the trunk with your left hand into the side compartment and depress fuse button (1). To reconnect the battery, slide reset lever to vertical position (2).



The image above shows the fuse with power on.

The image above shows the fuse with power off.

The original equipment battery is maintenance free. Do not remove the cap and do not add fluid.

Refer to the replacement number shown on the original battery label when a new battery is needed.

### ! Warning

Batteries have acid that can burn you and gas that can explode. You can be badly hurt if you are not careful. **SEE JUMP STARTING - 96 FOR** tips on working around a battery without getting hurt.

### ! Warning

**WARNING:** Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer.

**WASH HANDS AFTER HANDLING. SEE CALIFORNIA PROPOSITION 65 WARNING 71**

## **Vehicle Storage**

When the vehicle is going to be stored for an extended period of time it is important to disconnect the battery or use a trickle charger to prevent the battery from discharging

To disconnect the battery, access the main battery breaker through the trunk on the drivers side.

## **Exterior Lighting**

### **Headlamp Aiming**

Headlamp aim has been preset and should need no further adjustment. If the vehicle is damaged in a crash, the headlamp aim may be affected. If adjustment to the headlamps is necessary, contact Vanderhall Service

### **Bulb Replacement**

The vehicles exterior lamps including headlight, turn signals, and license plate are LED and are not serviceable. Should a lamp fail contact Vanderhall Service for a replacement

## **Electrical System**

### **Electrical System Overload**

The vehicle has fuses and circuit breakers to protect against an electrical system overload.

When the current electrical load is too heavy, the circuit breaker opens and closes, protecting the circuit until the current load returns to normal or the problem is fixed. This greatly reduces the chance of circuit overload and fire caused by electrical problems.

Fuses and circuit breakers protect power devices in the vehicle.

Replace a bad fuse with a new one of the identical size and rating.

fuse can be borrowed. Choose some feature of the vehicle that is not needed to use and replace it as soon as possible.

### **Headlamp Wiring**

An electrical overload may cause the lamps to go on and off, or in some cases to remain off. Have the headlamp wiring checked right away if the lamps go on and off or remain off.

## **Fuses and Circuit Breakers**

The wiring circuits in the vehicle are protected from short circuits by a combination of fuses, circuit breakers, and fusible thermal links. This greatly reduces the chance of fires caused by electrical problems.

Look at the silver-colored band inside the fuse. If the band is broken or melted, replace the fuse. Be sure you replace a bad fuse with a new one of the identical size and rating.

Fuses of the same amperage can be temporarily borrowed from another fuse location, if a fuse goes out. Replace the fuse as soon as you can.



## Engine Compartment Fuse Block

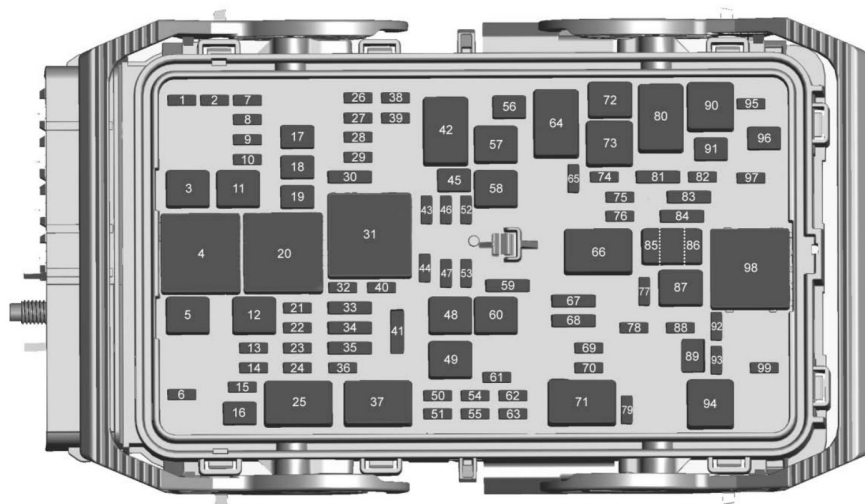


The engine compartment fuse block is on the driver side of the vehicle under the hood.

### Caution

Liquid on any vehicle electrical component may damage it. Always keep the covers on electrical components.

To access the fuses, press the clips together, and lift the cover. To reinstall the cover, push the cover until it is secure.

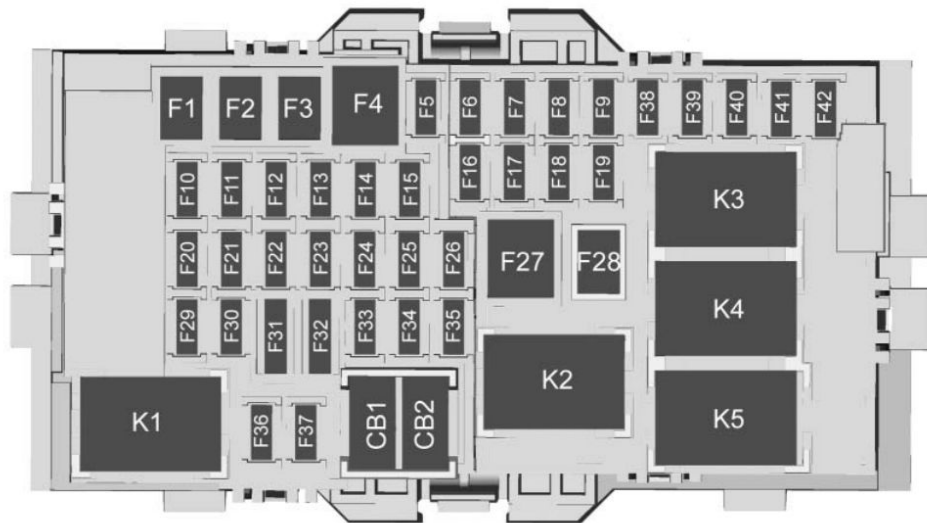


| Fuses | Usage                                       |    |                                                          | Relays | Usage                        |
|-------|---------------------------------------------|----|----------------------------------------------------------|--------|------------------------------|
| 1     | —                                           | 50 | —                                                        | 4      | AC DC inverter               |
| 2     | —                                           | 51 | —                                                        | 20     | -                            |
| 3     | Antilock brake system pump                  | 52 | —                                                        | 25     | -                            |
| 4     | AC DC inverter                              | 53 | —                                                        | 31     | Run/Crank                    |
| 6     | -                                           | 54 | —                                                        | 37     | -                            |
| 7     | Anti-theft warning siren/Horn               | 55 | —                                                        | 42     | Transmission auxiliary pump  |
| 8     | -                                           | 56 | Starter motor                                            | 64     | Starter motor                |
| 9     | Electric brake boost                        | 57 | Transmission auxiliary pump                              | 68     | Powertrain                   |
| 10    | -                                           | 58 | —                                                        | 71     | Low-beam headlamps           |
| 11    | DC DC battery 1                             | 59 | High-beam headlamps                                      | 73     | Air conditioning             |
| 12    | -                                           | 60 | Cooling fan                                              | 80     | Starter pinion/Starter motor |
| 13    | Heated mirror                               | 61 | —                                                        | 90     | SAI reaction solenoid        |
| 14    | —                                           | 62 | —                                                        | 94     | -                            |
| 15    | Passive entry/Passive start                 | 63 | —                                                        | 98     | SAI reaction pump            |
| 16    | -                                           | 65 | Air conditioning—HEV                                     |        |                              |
| 17    | -                                           | 67 | —                                                        |        |                              |
| 18    | Antilock brake system valve                 | 68 | —                                                        |        |                              |
| 19    | -                                           | 69 | Right low-beam HID headlamp                              |        |                              |
| 21    | -                                           | 70 | Left low-beam HID headlamp                               |        |                              |
| 22    | Parking lamp                                | 72 | Starter pinion                                           |        |                              |
| 23    | -                                           | 74 | —                                                        |        |                              |
| 24    | —                                           | 75 | Engine control module                                    |        |                              |
| 26    | Transmission control module/Ignition        | 76 | Powertrain off engine                                    |        |                              |
| 27    | Instrument panel body/Ignition              | 78 | Horn                                                     |        |                              |
| 28    | —                                           | 79 | Washer pump                                              |        |                              |
| 29    | Regulated voltage control/Ventilation       | 81 | Transmission control module/Engine control module        |        |                              |
| 30    | Malfunction indicator lamp/SS               | 82 | —                                                        |        |                              |
| 32    | CVS                                         | 83 | Ignition coil                                            |        |                              |
| 33    | Front heated seat                           | 84 | Powertrain on engine                                     |        |                              |
| 34    | BSM/ESS fan                                 | 85 | Engine control module switch 2                           |        |                              |
| 35    | Body control module 6/Body control module 7 | 86 | Engine control module switch 1                           |        |                              |
| 37    | Fuel module                                 | 87 | SAIR pump                                                |        |                              |
| 38    | —                                           | 88 | -                                                        |        |                              |
| 39    | —                                           | 89 | -                                                        |        |                              |
| 40    | -                                           | 91 | —                                                        |        |                              |
| 41    | —                                           | 92 | Traction power inverter module/Motor generator unit pump |        |                              |
| 43    | Heated steering wheel                       | 93 | -                                                        |        |                              |
| 44    | -                                           | 95 | SAIR solenoid                                            |        |                              |
| 45    | —                                           | 96 | -                                                        |        |                              |
| 46    | Engine control module/Ignition              | 97 | —                                                        |        |                              |
| 47    | —                                           | 99 | Coolant pump                                             |        |                              |
| 48    | Electric brake boost—HEV                    |    |                                                          |        |                              |
| 49    | DC DC battery 2                             |    |                                                          |        |                              |

### Instrument Panel Fuse Block



The instrument Panel Fuse Block is located under the dash against the firewall



| Fuses | Ampere rating [A] | Usage                                                 | Relays | Usage                          |
|-------|-------------------|-------------------------------------------------------|--------|--------------------------------|
| F1    | 30                | —                                                     | K1     | —                              |
| F2    | 30                | —                                                     | K2     | Retained accessory power relay |
| F3    | —                 | —                                                     | K3     | —                              |
| F4    | 40                | Heating, ventilation, and air conditioning blower     | K4     | —                              |
| F5    | 15                | Body control module 2                                 | K5     | —                              |
| F6    | —                 | —                                                     |        |                                |
| F7    | —                 | —                                                     |        |                                |
| F8    | 15                | Body control module 3                                 |        |                                |
| F9    | 5                 | Engine control module/Rear battery                    |        |                                |
| F10   | 15                | Body control module 2 (w/ Stop/Start option)          |        |                                |
| F11   | —                 | —                                                     |        |                                |
| F12   | —                 | —                                                     |        |                                |
| F13   | —                 | —                                                     |        |                                |
| F14   | —                 | —                                                     |        |                                |
| F15   | 20                | Transmission control module ( w/ Stop/Start option)   |        |                                |
| F16   | 30                | Amplifier                                             |        |                                |
| F17   | —                 | —                                                     |        |                                |
| F18   | —                 | —                                                     |        |                                |
| F19   | —                 | —                                                     |        |                                |
| F20   | 15                | Body control module 1                                 |        |                                |
| F21   | 15                | Body control module 4                                 |        |                                |
| F22   | —                 | —                                                     |        |                                |
| F23   | 10                | Electric steering column lock – China and Russia only |        |                                |
| F24   | 10                | —                                                     |        |                                |
| F25   | 7,5               | —                                                     |        |                                |
| F26   | —                 | —                                                     |        |                                |
| F27   | 30                | AC DC inverter                                        |        |                                |
| F28   | —                 | —                                                     |        |                                |
| F29   | 20                | Body control module 8                                 |        |                                |
| F30   | 10                | —                                                     |        |                                |
| F31   | 2                 | —                                                     |        |                                |
| F32   | —                 | —                                                     |        |                                |
| F33   | 10                | Heating, ventilation, and air conditioning            |        |                                |
| F34   | —                 | Gateway                                               |        |                                |
| F35   | —                 | —                                                     |        |                                |
| F36   | 5                 | —                                                     |        |                                |
| F37   | 20                | Front accessory power outlets                         |        |                                |
| F38   | 5                 | —                                                     |        |                                |
| F39   | 7,5               | —                                                     |        |                                |
| F40   | 10                | —                                                     |        |                                |
| F41   | 15                | Body control module 1 (w/ Stop/Start option)          |        |                                |
| F42   | 15                | —                                                     |        |                                |
| CB1   | —                 | —                                                     |        |                                |
| CB2   | 15                | Console accessory power outlet                        |        |                                |

**Recommended Inflation Pressure:**

The recommended tire inflation pressure for front and rear is **25 psi**.

**Tire Pressure**

Tires need the correct amount of air pressure to operate effectively.

**Caution**

Neither tire under inflation nor over inflation is good. Underinflated tires, or tires that do not have enough air, can result in:

- Tire overloading and overheating which could lead to a blowout.
- Premature or irregular wear.
- Poor handling.
- Reduced fuel economy.

Overinflated tires, or tires that have too much air, can result in:

- Unusual wear.
  - Poor handling.
  - Rough ride.
- Needless damage from road hazards.

**Tires**

This vehicle comes with high performance tires, with a tread and compound that are optimized for dry and wet road performance. While offering high speed handling and a comfortable ride. For additional information refer to the tire manufacturer.

The Tire and Loading Information label on the vehicle indicates the original equipment tires and the correct cold tire inflation pressures. The recommended pressure will give the best vehicle handling and ride comfort

The Tire Pressure Placard can be found under the dash on the driver side of the vehicle

**When to Check**

Check the tires once a month or more.

**How to Check**

Use a good quality pocket-type gauge to check tire pressure. Proper tire inflation cannot be determined by looking at the tire. Check the tire inflation pressure when

the tires are cold, meaning the vehicle has not been driven for at least three hours or no more than 1.6 km (1 mi).

Remove the valve cap from the tire valve stem. Press the tire gauge firmly onto the valve to get a pressure measurement. If the cold tire inflation pressure matches the recommended pressure on the Tire and Loading Information label, no further adjustment is necessary. If the inflation pressure is low, add air until the recommended pressure is reached. If the inflation pressure is high, press on the metal stem in the center of the tire valve to release air.

Recheck the tire pressure with the tire gauge. Put the valve caps back on the valve stems to keep out dirt and moisture and prevent leaks.

**Tire Inspection**

We recommend that the tires be inspected for signs of wear or damage at least once a month. Replace the tire if:

- The indicators at three or more places around the tire can be seen.
- There is cord or fabric showing through the tire's rubber.
- The tread or sidewall is cracked, cut, or snagged deep enough to show cord or fabric.
- The tire has a bump, bulge, or split.
- The tire has a puncture, cut, or other damage that cannot be repaired well because of the size or location of the damage.

### When It Is Time for New Tires

Factors such as maintenance, temperatures, driving speeds, vehicle loading, and road conditions affect the wear rate of the tires.

Tread wear indicators are one way to tell when it is time for new tires.

Tread wear indicators appear when the tires have only 1.6mm (1/16 in) or less of tread remaining.

The rubber in tires ages over time.

Multiple factors including temperatures, loading conditions, and inflation pressure maintenance affect how fast aging takes place. Vanderhall recommends that tires be replaced after six years, regardless of tread wear. The tire manufacture date is the last four digits of the DOT Tire Identification Number (TIN) which is molded into one side of the tire sidewall. The first two digits

represent the week (01–52) and the last two digits, the year. For example, the third week of the year 2010 would have a four-digit DOT date of 0310

### Buying New Tires

Vanderhall has developed and matched specific tires for the vehicle. The original equipment tires installed were designed to meet specific Tire Performance Criteria Specification (TPC Spec) system rating. When replacement tires are needed, Vanderhall strongly recommends buying the same manufacture and model tire as the original.

### ! Warning

- Poorly maintained and improperly used tires are dangerous.
- Underinflated tires pose a danger and could result in a crash causing serious injury. Check all tires frequently to maintain the recommended pressure. Tire pressure should be checked when the tires are cold.
- Overinflated tires are more likely to be cut, punctured, or broken by a sudden impact — such as when hitting a pothole. Keep tires at the recommended pressure.
- Worn or old tires can cause a crash. If the tread is badly worn, replace them.
- Replace any tires that have been damaged by impacts with potholes, curbs, etc.
- Improperly repaired tires can cause a crash. Only the dealer or an authorized tire service center should repair, replace, dismount, and mount the tires.

## Jump Starting

### Jump Starting

For more information about the vehicle battery, SEE BATTERY⇒86.

If the battery has run down, try to use another vehicle and some jumper cables to start your vehicle. Be sure to use the following steps to do it safely.

#### Caution

Ignoring these steps could result in costly damage to the vehicle. Trying to start the vehicle by pushing or pulling it will not work, and it could damage the vehicle.

1. Check the other vehicle. It must have a 12-volt battery with a negative ground system.
2. Position the two vehicles so that they are not touching.

3. Set the parking brake firmly and put the shift lever in P (Park) SEE SHIFTING INTO PARK ⇒ 56

#### Caution

If any accessories are left on or plugged in during the jump starting procedure, they could be damaged. Whenever possible, turn off or unplug all accessories connected to either vehicle before jump starting.

4. Turn the ignition to LOCK/OFF. Turn off all lights and accessories in both vehicles, except the hazard warning flashers if needed.
5. Connect one end of the red positive (+) cable to the positive (+) terminal in the engine bay on the discharged vehicle.
6. Connect the other end of the red positive (+) cable to the positive (+) terminal of the good battery.

7. Connect one end of the black negative (–) cable to the negative (–) terminal of the good battery.

8. Connect the other end of the black negative (–) cable to the ground strap behind and below the engine for the discharged battery.
9. Start the engine in the vehicle with the good battery and run the engine at idle speed for at least four minutes.
10. Disconnect the jumper cables in the reverse order (Step 8-5)
11. Try to start the vehicle that had the dead battery. If it will not start after a few tries, it probably needs service.

#### ! Warning

An electric fan can start up even when the engine is not running and can injure you. Keep hands, clothing, and tools away from any under hood electric fan.

97

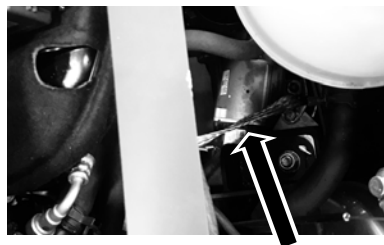
There are two possible jump start locations

First:

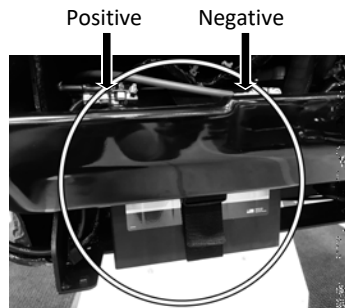
Open the hood and use the jump post and braided steel engine ground strap.



Positive



Negative



Alternatively access the battery directly by removing the rear diffuser

1. Connecting the Positive jumpstart cable to the Positive (Left) battery terminal.
2. Connecting the negative jumpstart cable to the Negative (Right) battery Terminal

**SEE ENGINE COMPARTMENT ➔72**

## Appearance Care

### Exterior Care

#### Washing the Vehicle

To preserve the vehicle's finish, wash it often and out of direct sunlight.

| Caution                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Do not use petroleum-based, acidic, or abrasive cleaning agents as they can damage the vehicle's paint, or metal parts. Follow all manufacturer directions regarding correct product usage, necessary safety precautions, and appropriate disposal of any vehicle care product. |

The  symbol is on any underhood compartment electrical center that should not be power washed.

Rinse the vehicle well, before washing to remove and loosen road grit and bugs.

Hand wash the vehicle using a non-abrasive cleaner marked safe for painted surfaces. Rinse the area immediately with cool clean water.

Do not allow cleaning agents to dry on the surface, they could stain. Dry the finish with a soft, clean chamois or an all-cotton towel to avoid surface scratches and water spotting.

#### Finish Care

Foreign materials such as calcium chloride and other salts, ice melting agents, road oil and tar, tree sap, bird droppings, chemicals from industrial chimneys, etc., can damage the vehicle's finish if they remain on painted surfaces. Wash the vehicle or affected areas often to prevent damage

Occasional hand waxing or mild polishing should be done to remove residue from the paint finish.

To keep the paint finish looking new, keep the vehicle garaged or covered whenever possible.

#### Cleaning Exterior Lamps and Emblems

Use only lukewarm or cold water, a soft cloth, and an automotive soap to clean exterior lamps and emblems. Follow instructions under "Washing the Vehicle" previously in this section.

Exterior lighting lenses are made of plastic. Do not clean or wipe them when dry as they may scratch and haze.

Do not use any of the following on the lenses :

- Abrasive or caustic agents.
- Washer fluids and other cleaning agents in higher concentrations than suggested by the manufacturer.

Solvents, alcohols, fuels, or other harsh cleaners.

## Windshield

To clean, use a terry cloth fabric dampened with water. Wipe droplets left behind with a clean dry cloth. If necessary, use a commercial glass cleaner after cleaning with plain water.

Cleaning the windshield with water during the first three to six months of ownership will reduce tendency to fog.

### Caution

Use caution when cleaning the windshield. Excessive force. Especially if placed on the upper edge of the windshield can cause it to crack.

Gentle pressure should be used when cleaning the windshield

## Tires

Use a stiff brush with tire cleaner to clean the tires.

### Caution

Using petroleum-based tire dressing products on the vehicle may damage the paint finish and/ or tires. When applying a tire dressing, always wipe off any overspray from all painted surfaces on the vehicle.

## Wheels

Use a soft, clean cloth with mild soap and water to clean the wheels. After rinsing thoroughly with clean water, dry with a soft, clean towel. A wax may then be applied.

### Caution

To avoid surface damage, do not use strong soaps, chemicals, abrasive polishes, cleaners, brushes, or cleaners that contain acid

## Brake System

Visually inspect brake lines and hoses for proper hook-up, binding, leaks, cracks, chafing, etc. Inspect disc brake pads for wear and rotors for surface condition. Inspect other brake parts, calipers, parking brake, master cylinder, brake fluid reservoir, vacuum pipes, and electric vacuum pump including vent hose, if equipped.

## Steering, Suspension, and Chassis Components

Visually inspect steering, suspension, and chassis components for damaged, loose, or missing parts or signs of wear at least once a year. Inspect power steering for proper hook-up, binding, leaks, cracks, chafing, etc.

Visually check constant velocity joint boots and axle seals for leaks.

### **Finish Damage**

Quickly repair minor chips and scratches with touch-up materials available from Vanderhall Service to avoid further damage. Larger areas of finish damage can be corrected in a body and paint shop. Contact Vanderhall Service prior to getting repairs.

### **Interior Care**

To prevent dirt particle abrasions, regularly clean the vehicle's interior. Immediately remove any soils.

Use a soft bristle brush to remove dust from knobs and crevices on the dash. Using a mild soap solution, immediately remove hand lotions, sunscreen, and insect repellent from all interior surfaces or permanent damage may result.

Use cleaners specifically designed for the surfaces being cleaned to prevent permanent damage. Apply all cleaners directly to the cleaning cloth. Do not spray cleaners on any switches or controls. Remove cleaners quickly.

Before using cleaners, read and follow all safety instructions on the label.

To prevent damage, do not clean the interior using the following cleaners or techniques:

- Never use a razor or any other sharp object to remove soil from any interior surface.
- Never use a brush with stiff bristles.
- Never rub any surface aggressively or with too much pressure.

- Do not use laundry detergents or dishwashing soaps with degreasers.

A concentrated soap solution will create streaks and attract dirt. Do not use solutions that contain strong or caustic soap.

- Do not heavily saturate the upholstery when cleaning
- Do not use solvents or cleaners containing solvents.

### **Speaker Covers**

Vacuum around a speaker cover gently, so that the speaker will not be damaged. Clean spots with water and mild soap on a damp soft cloth



### **Fabric/Carpet/Leather**

Start by vacuuming the surface using a soft brush attachment. If a rotating vacuum brush attachment is being used, only use it on the floor carpet. Before cleaning, gently remove as much of the soil as possible:

- Gently blot liquids with a paper towel. Continue blotting until no more soil can be removed.
- For solid soils, remove as much as possible prior to vacuuming.

#### **To clean:**

1. Saturate a clean, lint-free colorfast cloth with water. Microfiber cloth is recommended to prevent lint transfer to the fabric or carpet.
2. Remove excess moisture by gently wringing until water does not drip from the cleaning cloth

3. Start on the outside edge of the soil and gently rub toward the center. Fold the cleaning cloth to a clean area frequently to prevent forcing the soil in to the fabric.
4. Continue gently rubbing the soiled area until there is no longer any color transfer from the soil to the cleaning cloth.
5. If the soil is not completely removed, use a mild soap solution followed only by plain water.

If the soil is not completely removed, it may be necessary to use a commercial upholstery cleaner or spot lifter. Test a small hidden area for colorfastness before using commercial upholstery cleaner or spot lifter. If ring formation occurs, clean the entire fabric or carpet. After cleaning, use a paper towel to blot excess moisture.

| <b>Caution</b>                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soaking or saturating leather may cause permanent damage. Wipe excess moisture from these surfaces after cleaning and allow them to dry naturally. Never use heat, steam, or spot removers. Do not use cleaners that contain silicone or wax-based products. Cleaners containing these solvents can permanently change the appearance and feel of leather and are not recommended. |

## Towing the Vehicle

| Caution                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Incorrectly towing a disabled vehicle may cause damage. Do not lash or hook to suspension components. Use the proper straps around the tires to secure the vehicle. |

Have the vehicle towed on a flatbed car carrier. A wheel lift tow truck could damage the vehicle. Consult a professional towing service if the disabled vehicle must be towed.



*Service & Maintenance*

## Service and Maintenance

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## General Information

Your vehicle is an investment. This section describes the required maintenance for the vehicle. Follow this schedule to help protect against major repair expenses resulting from neglect or inadequate maintenance. It may also help to maintain the value of the vehicle if it is sold. It is the responsibility of the owner to have all required maintenance performed.

| Caution                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Damage caused by improper maintenance can lead to costly repairs. Maintenance intervals, checks, inspections, recommended fluids, and lubricants are important to keep the vehicle in good working condition. |

## Maintenance Schedule

### Owner Checks and Services

#### Once a Month

- Check the engine oil level. SEE ENGINE OIL ⇒ 75.
- Check the tire inflation pressures. SEE TIRE PRESSURE ⇒ 94.
- Inspect the tires for wear. SEE TIRE INSPECTION ⇒ 95.

## Maintenance Schedule

|  V A N D E R H A L L | 12,000 KM | 24,000 KM | 36,000 KM | 48,000 KM | 60,000 KM | 72,000 KM | 85,000 KM | 97,000 KM | 109,000 KM | 120,000 KM | 133,000 KM | 145,000 KM | 157,000 KM | 170,000 KM | 1190,000 KM | 1205,000 KM | 217,000 KM | 230,000 KM | 1240,000 KM |
|-------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|-------------|-------------|------------|------------|-------------|
| Check engine oil level. Change engine oil and filter, if needed.                                      | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓         | ✓          | ✓          | ✓          | ✓          | ✓          | ✓          | ✓           | ✓           | ✓          | ✓          | ✓           |
| Clean or replace engine air cleaner filter (or every 4 years, whichever occurs first).                |           |           |           | ✓         |           |           |           | ✓         |            |            |            | ✓          |            |            | ✓           |             |            |            | ✓           |
| Replace spark plugs                                                                                   |           |           |           |           |           |           |           | ✓         |            |            |            |            |            |            | ✓           |             |            |            |             |
| Change automatic transmission fluid.                                                                  |           |           |           |           |           | ✓         |           |           |            |            |            | ✓          |            |            |             |             | ✓          |            |             |
| Change brake fluid (or every 3 years, whichever occurs first)                                         |           |           |           |           |           | ✓         |           |           |            |            |            | ✓          |            |            |             |             | ✓          |            |             |
| Drain and fill engine cooling system (or every 5 years, whichever comes first).                       |           |           |           |           |           |           |           |           |            |            |            |            |            |            |             |             |            |            | ✓           |
| Replace timing belt, idler pulley, and timing belt tensioner                                          |           |           |           |           |           |           |           |           |            |            |            |            | ✓          |            |             |             |            |            |             |
| Inspect engine belts for fraying, excessive cracks (or every 10 years, whichever occurs first)        |           |           |           |           |           |           |           |           |            |            |            |            |            |            |             |             |            |            | ✓           |

Maintenance Schedule (Imperial Units)

Maintenance Schedule (Metric Units)

### **Additional Maintenance and Care**

Your vehicle is an investment and caring for it properly may help to avoid future costly repairs. To maintain vehicle performance, additional maintenance services may be required.

The following list is intended to explain the services and conditions to look for that may indicate services are required.

### **Battery**

The battery supplies power to start the engine and operate any additional electrical accessories.

- To avoid break-down or failure to start the vehicle, maintain a battery with full cranking power.

**SEE BATTERY ⇨ 86 AND VEHICLE STORAGE ⇨ 87**

### **Belt**

- The Belt may need replacing if they squeak or show signs of cracking or splitting.

### **Brakes**

Brakes stop the vehicle and are crucial to safe driving.

Signs of brake wear may include chirping, grinding, or squealing noises, or difficulty stopping.

### **Fluids**

Proper fluid levels and approved fluids protect the vehicle's systems and components. **SEE RECOMMENDED FLUIDS AND LUBRICANTS ⇨ 111**

- Engine oil levels should be monthly.
- Instrument cluster lights may come on to indicate that fluids may be low and need to be filled.

### **Hoses**

Hoses transport fluids and should be regularly inspected to ensure that there are no cracks or leaks.

### **Lamps**

Properly working headlamps, tail lamps, and brake lamps are important to see and be seen on the road.

- Signs that the headlamps need attention include dimming, failure to light, cracking, or damage.
- The brake lamps need to be checked periodically to ensure that they light when braking.

**Shocks**

Shocks help aid in control for a smoother ride.

- Signs of wear may include steering wheel vibration, bounce/ sway while braking, longer stopping distance, or uneven tire wear.
- Inspect for signs of damage such as leaking, or blown seals

**Tires**

Tires need to be properly inflated, rotated, and balanced. Maintaining the tires can save money and fuel, and can reduce the risk of tire failure.

- Signs that the tires need to be replaced include three or more visible tread wear indicators; cord or fabric showing through the rubber; cracks or cuts in the tread or sidewall; or a bulge or split in the tire.

**Vehicle Care**

To help keep the vehicle looking like new the vehicle should be cleaned frequently. For information on how to clean and protect the vehicle's interior and exterior, **SEE INTERIOR CARE ⇨ 100 AND EXTERIOR CARE ⇨ 98.**

**Wheel Alignment**

Wheel alignment is critical for ensuring that the tires deliver optimal wear and performance.

- Signs that the alignment may need to be adjusted include pulling, improper vehicle handling, or unusual tire wear.

**Windshield**

For safety, appearance, and the best viewing, keep the windshield clean and clear.

Signs of damage include scratches, cracks, and chips.

## Recommended Fluids

### Recommended Fluids and Lubricants

Fluids and lubricants identified below by name, part number, or specification can be obtained from your dealer.

| Usage                  | Fluid/ Lubricant                                                                                                  |
|------------------------|-------------------------------------------------------------------------------------------------------------------|
| Engine Oil             | Use only engine oil with the proper SAE viscosity grade: <b><u>SAE 0W-20</u></b>                                  |
| Engine Coolant         | 50/50 mixture of clean, drinkable water and use only DEX-COOL® Coolant.<br><b><u>SEE ENGINE COOLANT ⇨ 77.</u></b> |
| Hydraulic Brake System | DOT 3 Hydraulic Brake Fluid                                                                                       |
| Automatic Transmission | DEXRON®-VI Automatic Transmission Fluid.                                                                          |
| Chassis Lubrication    | N/A                                                                                                               |

## Vehicle Identification

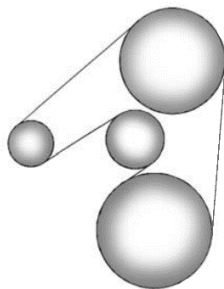
### Vehicle Identification Number (VIN)

**INVALIDXGH190000**

This legal identifier is on the front right corner of the chassis, located behind the Wheel. The VIN also appears on the Vehicle Certification and Service Parts labels and certificates of title and registration.

## Vehicle Data

### Engine Belt Routing



**1.4L/1.5L L4 Engine**

### Capacities and Specifications

The following approximate capacities are given in metric and English conversions. SEE RECOMMENDED FLUIDS AND LUBRICANTS ⇒ 111. For more information

| Application                                                                                                                                              | Capacities                                                                                                   |                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------|
|                                                                                                                                                          | Metric                                                                                                       | English          |
| Air Conditioning Refrigerant                                                                                                                             | For the air conditioning system refrigerant type and charge amount, see the refrigerant label under the hood |                  |
| Cooling System                                                                                                                                           | 6.5 L                                                                                                        | 6.9 qt           |
| Engine Oil with Filter                                                                                                                                   | 4.0 L                                                                                                        | 4.2 qt           |
| Fuel Tank                                                                                                                                                | 35 L                                                                                                         | 9 Gal            |
| Spark Plug Gap                                                                                                                                           | 0.60 - 0.70mm                                                                                                | 0.024 - 0.028 in |
| All capacities are approximate. When adding, be sure to fill to the approximate level, as recommended in this manual. Recheck fluid level after filling. |                                                                                                              |                  |



*Customer Information*



## **Limited Warranty**

Vanderhall North America LLC, 3500 Mountain Vista Pkwy, Provo, Utah 84606 (Vanderhall) grants a ONE-YEAR LIMITED WARRANTY on all components of your Vanderhall vehicle against defects in material or workmanship. This warranty covers the parts and labor charges for repair or replacement of defective parts within the contiguous United States and begins on the date of purchase by the original retail purchaser. This warranty is transferable to another owner during the warranty period through an authorized Vanderhall dealer, but any such transfer will not extend the original term of the warranty. The duration of this warranty may vary by international region based upon local laws and regulations.

## **Registration**

At the time of sale, the Warranty Registration Form must be completed by your dealer and submitted to Vanderhall within three days. Upon receipt of this registration, Vanderhall will record the registration for warranty. No verification of registration will be sent to the purchaser as the copy of the Warranty Registration Form will be your proof of warranty coverage. If you have not signed the original registration and received the customer copy, please contact your dealer immediately. NO WARRANTY COVERAGE WILL BE ALLOWED UNLESS YOUR VEHICLE IS REGISTERED WITH VANDERHALL. Initial dealer preparation and set-up of your vehicle is very important in ensuring trouble-free operation. Purchasing a vehicle without proper dealer set-up will void your warranty coverage.

**Warranty Exclusions and Coverage:**

## Limitations of Warranties and Remedies

This Vanderhall limited warranty excludes any failures that are not caused by a defect in material or workmanship. THIS WARRANTY DOES NOT COVER CLAIMS OF DEFECTIVE DESIGN. This warranty also does not cover acts of God, accidental damage, normal wear and tear, abuse or improper handling. This warranty also does not cover any vehicle, component, or part that has been altered structurally, modified, neglected, improperly maintained, or used for racing, competition or purposes other than for which it was designed.

Mixing oil brands or using non-recommended oil may cause engine damage. Damage or failure resulting from the use of non-recommended lubricants or fluids is not covered by this warranty. This warranty excludes damages or failures resulting from: improper lubrication; improper engine timing; improper fuel; surface imperfections caused by external stress, heat, cold or contamination; operator error or abuse; improper component alignment, tension, adjustment or altitude compensation; snow, water, dirt or other foreign substance ingestion/contamination; improper maintenance; modified components; use of aftermarket or unapproved components, accessories, or attachments; unauthorized repairs; or repairs made after the warranty period expires or by an unauthorized repair center.

This warranty excludes damages or failures caused by abuse, modifications, accident, fire, or any other cause other than a defect in materials or workmanship and provides no coverage for consumable components, general wear items, or any parts exposed to friction surfaces, stresses, environmental conditions and/or contamination for which they were not designed or not intended, including but not limited to the following items:

- Wheels and tires
- Suspension components
- Brake components
- Seat components
- Clutches and components
- Steering components
- Batteries
- Light bulbs/Sealed beam lamps
- Filters
- Lubricants
- Bushings
- Finished and unfinished surfaces
- Fuel injectors/Throttle body components
- Engine components
- Drive belts
- Hydraulic components and fluids
- Circuit breakers/Fuses
- Electronic components
- Spark plugs
- Sealants
- Coolants
- Bearings

This warranty provides no coverage for personal loss or expense, including mileage, transportation costs, hotels, meals, shipping or handling fees, vehicle pick-up or delivery, replacement rentals, loss of vehicle use, loss of profits or loss of vacation or personal time. This Vanderhall limited warranty excludes any vehicle that has been used for commercial purposes. This includes but is not limited to uses such as rental, taxi, Uber or Lyft; indeed, any commercial use effectively voids all coverage of this limited Warranty.

THE EXCLUSIVE REMEDY FOR BREACH OF THIS WARRANTY SHALL BE, AT VANDERHALL'S OPTION, REPAIR OR REPLACEMENT OF ANY DEFECTIVE MATERIALS, COMPONENTS, OR PRODUCTS. THE REMEDIES SET FORTH IN THIS WARRANTY ARE THE ONLY REMEDIES AVAILABLE TO ANY PERSON FOR BREACH OF THIS WARRANTY. VANDERHALL SHALL HAVE NO LIABILITY TO ANY PERSON FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY DESCRIPTION, WHETHER ARISING OUT OF EXPRESS OR IMPLIED WARRANTY OR ANY OTHER CONTRACT, NEGLIGENCE, OR OTHER TORT OR OTHERWISE. THIS EXCLUSION OF CONSEQUENTIAL, INCIDENTAL, AND SPECIAL DAMAGES IS INDEPENDENT FROM AND SHALL SURVIVE ANY FINDING THAT THE EXCLUSIVE REMEDY FAILED OF ITS ESSENTIAL PURPOSE. THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS EXCLUDED FROM THIS LIMITED WARRANTY. ALL OTHER IMPLIED WARRANTIES (INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY) ARE LIMITED IN DURATION TO THE ABOVE 24-MONTH WARRANTY PERIOD. VANDERHALL DISCLAIMS ALL EXPRESS WARRANTIES NOT STATED IN THIS WARRANTY. SOME STATES DO NOT PERMIT THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR ALLOW LIMITATIONS ON THE DURATION OF IMPLIED WARRANTIES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU IF INCONSISTENT WITH CONTROLLING STATE LAW.

## **How to Obtain Warranty Service**

If your vehicle requires warranty service, you must take it to a Vanderhall Servicing Dealer. When requesting warranty service, you must present your copy of the Warranty Registration Form to the dealer. THE COST OF TRANSPORTATION TO AND FROM THE DEALER IS YOUR RESPONSIBILITY. Vanderhall suggests that you use your original selling dealer, however, you may use any Vanderhall Servicing Dealer to perform warranty service. If you purchase a Vanderhall vehicle to be kept and used outside of the country in which the product was originally purchased, all warranty coverage will be denied. Please work with your dealer to resolve any warranty issues. Should your dealer require any additional assistance, they will contact the appropriate person at Vanderhall. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. If any of the above terms are void because of federal, state, or local law, all other warranty terms will remain in effect.

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