



VANDERHALL

Laguna



The Vanderhall Laguna is NOT a car.

The Vanderhall Laguna 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 Laguna 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 Laguna.

Introduction	4	Climate Controls.....	51
Quick Overview	6	Driving and Operation	53
Keys and Doors	18	Vehicle Care	66
Seats and Restraints.....	24	Service and Maintenance	99
Instruments and Controls	28	Technical Data	108
Lighting	46	Customer Information.....	111
Bluetooth® Audio.....	49		

Introduction



VANDERHALL

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

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 Laguna 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, gage, or indicator



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

Vehicle symbol Chart



: Air Conditioning



: Antilock Brake System (ABS)



: Brake System Warning Light



: Charging System



: Cruise Control



: Do Not Puncture



: Do Not Service



: Engine Coolant Temperature



: Flame/Fire Prohibited



: Fuel Gauge



: Fuses



: Headlamp High/Low-Beam Changer



: Malfunction Indicator Lamp



: Oil Pressure



: POWER



: Traction Control



: Under Pressure



: Windshield Washer Fluid

Quick Overview

Instrument Panel

Instrument Panel Introduction	7
-------------------------------	---

Introduction to vehicle features

Remote Keyless Entry System	
Door Locks	9
Opening the Door	9
Seat Adjustment	10
Heated Seats	10
Safety Belts	10
Mirror Adjustments	11
Steering Wheel Adjustment	11
Windshield Wiper/Washer	11
Climate Control	12
Transmission	12
Starting the Engine	12

Vehicle Features

Stereo Bluetooth® Audio	13
Steering Wheel Controls	13
Cruise Control	14

Comfort/Sport Mode

Error! Bookmark not defined.

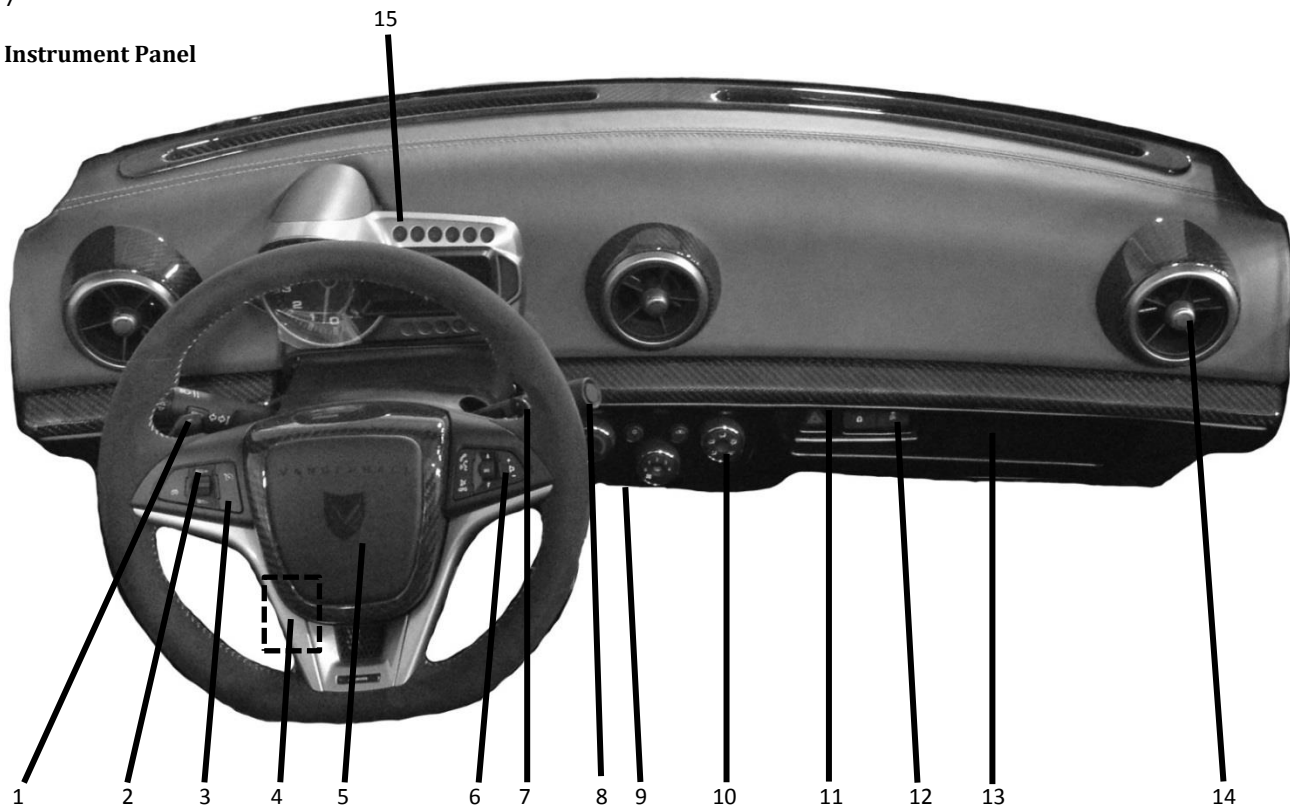
Driver Information	
Center (DIC)	15
Power Outlet	15
Trunk	15
Hardtop	16

Performance and Maintenance

Traction Control	17
Engine Oil Life Monitor	17

7

Instrument Panel



8

1. Turn Signal Lever
2. Paddle Shift (Down)
3. Cruise Control Controls
4. Steering Wheel Adjustment
5. Horn
6. Steering Wheel Radio Controls
7. Paddle Shift (UP)
8. Windshield Wiper/ Washer
9. OBDII Port (Under Dash)
10. Climate Control
11. Emergency Flasher
12. Traction Control
13. 12 Volt Accessory Power Port
14. Air Vent
15. Instrument Cluster

Remote Keyless Entry System

The transmitter for the Remote Keyless Entry system may work up to 60m (195 ft) away from the vehicle.

Pressing the release button will extend the key blade which can be used for the vehicles ignition.



Door Locks

To lock or unlock the doors from outside the vehicle use the Remote Keyless Entry Transmitter:

To unlock the vehicle press 

Press  to lock both doors

SEE KEYS ⇨ 18 AND REMOTE KEYLESS ENTRY SYSTEM OPERATION ⇨ 19.



Exterior Door Handle

Opening the Door from outside the vehicle

To open the Door

1. Unlock the door using the Key Fob (press )
2. Pull up on the Exterior door handle

Opening the Door from outside the vehicle

- Pull Forward on the Interior door handle



1. Cup Holder
2. Heated Seat Button
3. Seat Adjustment Handle
4. Interior Door Handle
5. 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. Three lights will appear on the button indicating the heater is on High

Press a second time 2 lights will appear on the button indicating Medium heat

Pressing the button a third time 1 light will be illuminated indicating Low heat

Pressing the button a fourth time will turn the Heated seats off

Safety Belts

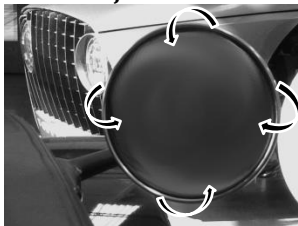


Refer to the following sections for important information on how to use safety belts properly:

SAFETY BELTS ⇒ 25.

HOW TO WEAR SAFETY BELTS PROPERLY ⇒ 26.

Mirror Adjustment



The Mirrors are manually adjustable.

To adjust mirror:

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

Steering Wheel Adjustment

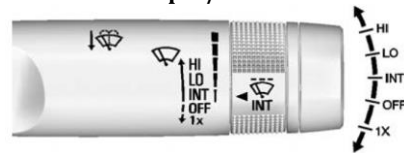


To adjust the steering wheel:

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.

Windshield Wiper/Washer



INT : Move the lever up to INT for intermittent wipes, then turn the INT band up for more frequent wipes or down for less frequent wipes.

OFF : Use to turn the wipers off.

1X : For a single wipe, briefly move the wiper lever down. For several wipes, hold the wiper lever down.

↓  : Pull the windshield wiper lever toward you to spray windshield washer fluid and activate the wipers.

SEE WINDSHIELD WIPER/WASHER ⇨ 30.

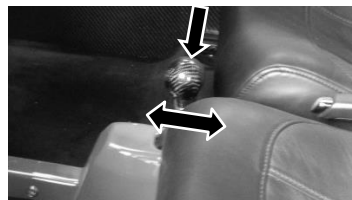
Climate Control



1 2 3 4

1. Temperature Control
2. Air vent selector
3. Fan Speed Control
4. Air Conditioning

Transmission



Manual Mode

This feature allows you to manually select gears using the paddles located on the back side of the steering wheel

1. Push the shift lever down
2. Pull the shift lever from Drive (D) to Manual (M)
3. Pull the right hand lever to up shift, or the left hand lever to down shift

SEE MANUAL MODE ⇨ 59.

Starting the Engine

The vehicle has a Computer-Controlled Cranking System. It assists in starting the engine and protects components. If the ignition key is turned to START and then released when the engine begins cranking, the engine will continue cranking for a few seconds or until the engine starts. If the engine does not start and the key is held in START, cranking will be stopped after 15 seconds to prevent damage. To prevent gear damage, cranking is not allowed if the engine is running. Engine cranking can be stopped by turning the ignition key to ACC/ACCESSORY or LOCK/OFF.

SEE STARTING THE ENGINE ⇨ 55.

Vehicle Features

Stereo Bluetooth® Audio

The Bluetooth® system allows users with a Bluetooth-enabled mobile device to play audio over the vehicle speakers. The Bluetooth-enabled mobile device must be paired with the in-vehicle Bluetooth system before it can be used.

SEE BLUETOOTH ⇨ 50

Steering Wheel Controls



Audio steering wheel controls can be adjusted at the steering wheel.

 / : Is non-functional

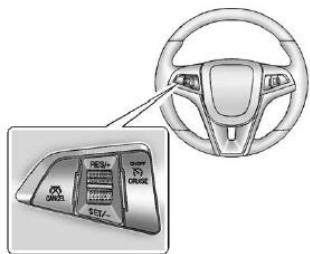
 / : Is non-functional

 **SRC** : Press up or down to go to the next or previous Bluetooth audio file. Press and hold up or down to fast forward or reverse.

+  -: Press + or – to increase or decrease the volume.

SEE STEERING WHEEL CONTROLS ⇨ 50

Cruise Control



CRUISE (ON/OFF): Press to turn the cruise control system on and off. A white indicator comes on in the instrument cluster when cruise is turned on.

RES/+ (Resume/Accelerate): If there is a set speed in memory, move the thumbwheel up briefly to resume to that speed or hold upward to accelerate. If cruise control is already active, use to increase vehicle speed.

SET/ – (Set/Coast): Move the thumbwheel down briefly to set the speed and activate cruise control. If cruise control is already active, use to decrease speed.

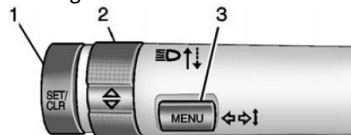


CANCEL (Cancel) : Press to disengage cruise control without erasing the set speed from memory.

SEE CRUISE CONTROL ⇨ 62.

Driver Information Center (DIC)

The DIC display is in the instrument cluster. It shows the status of many vehicle systems. The controls for the DIC are on the turn signal lever.



1. SET/CLR: Press to set or clear the menu item displayed.
2. $\triangle \nabla$: Turn the band to scroll through the menu items.
3. MENU: Press to display the DIC menus. This button is also used to return to or exit the last screen displayed on the DIC.

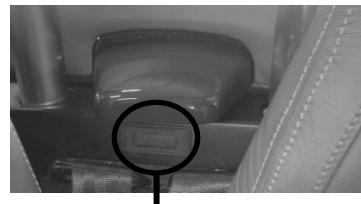
SEE DRIVER INFORMATION CENTER (DIC) $\Rightarrow$ 41.

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 $\Rightarrow$ 31

Trunk



Trunk Release Button

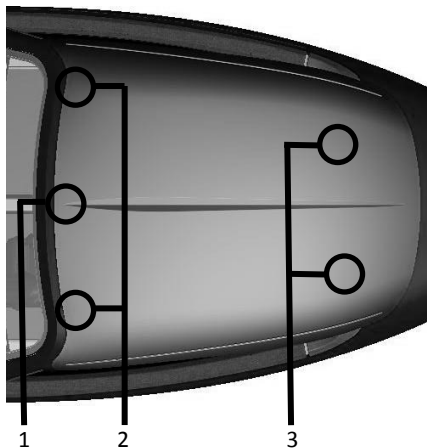
Trunk Release

To open the trunk press trunk release button located between the driver and passenger seats

The trunk will not release if the vehicle is locked.

If the vehicle is locked pressing the  twice will unlock the trunk release allowing access

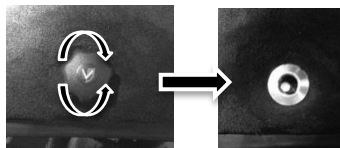
Hard Top



1. Front Security Strap
2. Hard Top Studs
3. Rear Straps

To Remove the Hardtop

1. Undo the Velcro and remove the Rear Straps (3) from the around the hard top support bar Undo the Front Security Strap (1) and pull free of the loop on the windshield frame



2. Remove the hard top thumb screws
3. Lift the hard top off of the vehicle and hang it on the hard top wall mount.

To Install the Hardtop

1. Place the pads on the rear of the hard top on the support bars
2. Rotate the hard top down until the Hard Top Studs (2) are protruding through the windshield post grommets
3. Install and tighten the hard top thumb screws
4. Wrap the Rear Strap (3) around the hard top support and thread through the loop on the hard top. Pull taught and secure the Velcro.
5. Thread the Front Security Strap (1) through the windshield loop. Pull taught and secure the Velcro

Performance and Maintenance

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  on the center console. The traction off light  illuminates. Press and release the TCS button  again to turn traction control back on.

SEE TRACTION CONTROL ⇨ 61

Engine Oil Life Monitor

The engine oil life monitor calculates engine oil life based on vehicle use and displays the: %CHANGE message on the DIC when it is necessary to change the engine oil and filter. Remember, the oil life display must be reset after each oil change. It will not reset itself.

Resetting the Oil Life System

1. Press the MENU button to show Remaining Oil Life on the display. This display shows an estimate of the oil's remaining useful life. If 99% is displayed, that means that 99% of the current oil life remains.
2. To reset the engine oil life system, press the SET/CLR button while the oil life display is active. After a few seconds, there will be a single chime and the oil life will be reset to 100%.

Be careful not to reset the oil life display accidentally at any time other than when the oil has just been changed. It cannot be reset accurately until the next oil change.

SEE ENGINE OIL LIFE SYSTEM ⇨ 72

Keys and Doors

Remote Keyless Entry System

Vehicle Locator/Panic Alarm	20
Programming Transmitters to the Vehicle	20
Programming with a Recognized Transmitter	20
Programming without a Recognized Transmitter	20
Battery Replacement	21

Door Locks

Door Locks	21
------------	----

Trunk

Trunk	21
-------	----

Vehicle Security

Arming the Alarm	22
Disarming the System	22
How to Detect a Tamper Condition	22

Immobilizer

Immobilizer Operation	22
-----------------------	----

Remote Keyless Entry System

Your Key ring, Ignition Key and Keyless Entry Transmitter are designed to work together

If a replacement or additional copy is required contact the Vanderhall Service Department

If the Key becomes difficult to insert or turn in the ignition. Inspect the key grooves for debris.

Pressing the release button will extend the key blade. The key can be used for the vehicles ignition.



If there is a decrease in the transmitters operating range:

- Try moving closer to the vehicle, you may be out of range
- Other vehicles or objects may be blocking the signal.
- Replace the transmitter's battery. See "Battery Replacement" section.
- If the transmitter is still not working correctly, contact Vanderhall Service Department

⏏ (Lock): Press to lock both doors and the trunk. The turn signal indicators will flash.

To indicate the vehicle is locked.

Pressing the **⏏** button a second time will produce the horn may sound and flash the turn signal to indicate the vehicle is locked.

If the driver door is open when **⏏** is pressed, all doors lock except the driver door.

If the passenger door is open when **⏏** is pressed, all doors lock.

 (Unlock) : Press to unlock both doors. The turn signal indicators flash, and the headlights will come on to indicate unlocking has occurred.

Pressing  may also disarm the theft-deterrent system.

Vehicle Locator/Panic Alarm

Press and release one time to initiate vehicle locator. The exterior lamps flash and the horn chirps three times. Press and hold  for at least three seconds to sound the panic alarm. The horn sounds and the turn signals flash for 30 seconds until  is pressed again, or the key is placed in the ignition and turned to ON/RUN.

Programming Transmitters to the Vehicle

Only RKE transmitters programmed to this vehicle will work. If a transmitter is lost or stolen, a replacement can be purchased and programmed through the Vanderhall Service Department. When the replacement transmitter is programmed to this vehicle, all remaining transmitters must also be reprogrammed. Any lost or stolen transmitters will no longer work once the new transmitter is programmed.

Programming with a Recognized Transmitter

To program a new key:

1. Insert the original, already programmed key in the ignition and turn the key to the ON/ RUN position.
2. Turn the key to LOCK/OFF, and remove the key.
3. Insert the new key to be programmed and turn it to the ON/RUN position

The security light will turn off once the key has been programmed.

Repeat Steps 1–3 if additional keys are to be programmed. If a key is lost or damaged, see your dealer to have a new key made.

Programming without a Recognized Transmitter

Program a new key to the vehicle when a recognized key is not available. If there are no currently recognized keys available, follow this procedure to program the first key. This procedure will take approximately 30 minutes to complete for the first key. The vehicle must be off and all of the keys you wish to program must be with you.

1. Insert the new vehicle key into the ignition.
2. Turn to ON/RUN. The security light will come on.

21

3. Wait 10 minutes until the security light turns off.

4. Turn the ignition to LOCK/OFF.

5. Repeat Steps 2–4 two more times. After the third time, turn to ON/RUN; the key is learned and all previously known keys will no longer work with the vehicle.

Remaining keys can be learned by following the procedure in “Programming with a Recognized Transmitter.”

Battery Replacement

The battery is not rechargeable. To replace the battery:



Caution

When replacing the battery, do not touch any of the circuitry on the transmitter. Static from your body could damage the transmitter.

1. Press the button on the transmitter to extend the key
2. Remove the battery cover by prying with a finger.
3. Remove the old battery.
4. Insert the new battery, positive side facing up. Replace with a CR2032 or equivalent battery.
5. Snap the battery cover back on to the transmitter.

Door Locks

To unlock or lock the doors from the outside of the vehicle. Using the Remote Keyless Entry fob press the  (Lock) button to lock or the  (Unlock) to unlock.

Trunk

To open the trunk press trunk release button located between the driver and passenger seats

The trunk will not release if the vehicle is locked.

If the vehicle is locked pressing the  twice will unlock the trunk release allowing access

When closing the trunk, close from the center and ensure it is fully latched.

Vehicle Security

This Vehicle is equipped with a theft deterrent alarm; however this does not make the vehicle impossible to steal.

Arming the Alarm

1. Close both doors, the trunk and hood.
2. Lock the vehicle with the RKE transmitter.
3. After 30 seconds the alarm system will arm. Pressing  on the RKE transmitter a second time will bypass the 30-second delay and immediately arm the alarm system.

If the driver door is opened without first unlocking with the RKE transmitter, the horn will chirp and the lights will flash to indicate pre-alarm. If the vehicle is not started, or the door is not unlocked by pressing  on the RKE transmitter during the 10-second pre-alarm, the alarm will be activated.

If a door, the hood, or the trunk is opened without first unlocking with the RKE transmitter, the turn signals will flash and the horn will sound for about 30 seconds. The alarm system will then re-arm to monitor for the next unauthorized event.

Disarming the System

To disarm the system, either unlock the doors using the RKE transmitter, or start the vehicle with a recognized transmitter in the vehicle.

To avoid setting off the alarm by accident:

- Press  on the RKE transmitter.
- Start the vehicle.

To avoid setting off the alarm by accident:

- Lock the vehicle after all occupants have left the vehicle and all doors are closed.
- Always unlock a door with the RKE transmitter.
- Do not reach over the door and pull the interior door handle

How to Detect a Tamper Condition

If  is pressed on the transmitter and the horn chirps and the lights flash three times, an alarm occurred previously while the alarm system was armed.

Immobilizer

Immobilizer Operation

This vehicle has a passive theft-deterrent system. The system does not have to be manually armed or disarmed. The vehicle is automatically immobilized when the key is removed from the ignition. The system is automatically disarmed when the vehicle is started with the correct key. The key uses a transponder that matches an immobilizer control unit in the vehicle and automatically disarms the system. Only an authorized key starts the vehicle. The vehicle may not start if the key is damaged.



The security light in the instrument cluster comes on if there is a problem with arming or disarming the theft-deterrent system.

When trying to start the vehicle, the security light comes on briefly when the ignition is turned on.

If the engine does not start and the security light stays on, there is a problem with the system. Turn the ignition off and try again.

If the engine still does not start, and the key appears to be undamaged or the light continues to stay on, try another ignition key. If the engine does not start with the other key, the vehicle needs service. If the vehicle does start, the first key may be

damaged. See your dealer who can service the theft-deterrent system and have a new key made.

Do not leave the key or device that disarms or deactivates the theft-deterrent system in the vehicle.

Seats and Restraints

Seats

Seat Adjustment 24

Heated Seats 24

Safety Belts

Why safety Belts Work 26

How to wear safety
belts properly 26

Securing Lap and
shoulder Belt 27

Unlatching Lap and
Shoulder Belt 27

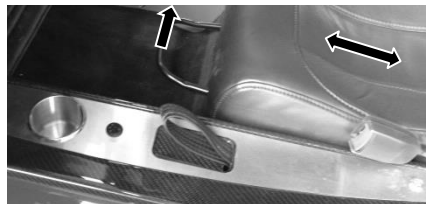
Seats

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 on the heated seats press the  button. Three lights will appear on the button indicating the heater is on High

Press a second time 2 lights will appear on the button indicating Medium heat

Pressing the button a third time 1 light will be illuminated indicating Low heat

Pressing the button a fourth time will turn the Heated seats off

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.

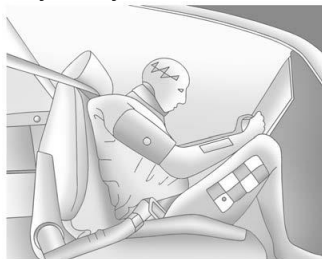
It is extremely dangerous to ride in a cargo area, inside or outside of a
(Continued)

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!

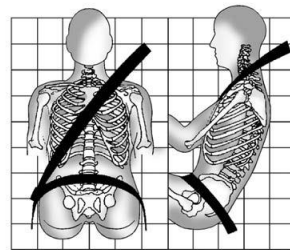
When you wear a safety belt, you and the vehicle slow down together. There is more time to stop because you stop over a longer distance and, when worn properly, your strongest bones take the forces from the safety belts. That is why wearing safety belts make such good sense.

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.

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

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

Unlatching Lap and Shoulder Belt

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

Instruments and Controls

Controls

Steering Wheel Adjustment	29
Steering Wheel Controls	29
Horn	29
Windshield Wiper/Washer	30
Power Outlets	31

Warning Lights, Gauges, and Indicators

Instrument Cluster	32
Speedometer	33
Odometer	33
Trip Odometer	33
Tachometer	33
Fuel Gauge	33
Charging System	34
Malfunction Indicator Lamp (Check Engine Light)	34
Emissions Inspection and Maintenance Programs	35
Service Vehicle Soon Light	36
Owner's Manual Indicator	36

Brake System Warning Light	36
Antilock Brake System (ABS) Warning Light	37
Power Steering Warning Light	37
Traction Off Light	38
Traction Control System (TSC) Light	38
Engine Coolant Temperature Warning Light	39
Engine Oil Pressure Light	39
Low Fuel Warning Light	40
Immobilizer Light	40
Reduced Engine Power Light	40
High- Beam On Light	40
Daytime Running Lamps (DRL) Indicator Light	41
Lamps On Reminder	41
Cruise Control Light	41
Door Ajar Light	41

DIC Operation and Displays

Information Displays

Driver Information Center (DIC)	41
DIC Buttons	42
DIC Menu Items	42
Units	42
Language	42
Remaining Oil Life	42
Vehicle Messages	43
Engine Oil Messages	43

Trip computer

Average Speed	44
Fuel Range	44
Average Fuel Economy	44
Timer	45

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.

Steering Wheel Controls



Audio steering wheel controls can be adjusted at the steering wheel.

 / : Is non-functional

 / : Is non-functional

 **SRC** : Press up or down to go to the next or previous audio file on a Bluetooth paired device.

Press and hold up or down to fast forward or reverse.

  -: Press + or - to increase or decrease the volume.

Horn



Press the Steering Wheel Pad to sound the horn

Windshield Wiper/Washer



The Windshield wiper/washer lever is located on the right of the steering wheel

Move the lever to one of the following positions

HI : use for fast wiping

Lo : use for slow wiping

INT : use for intermittent wipes, then turn the  INT band up for more frequent wipes or down for less frequent wipes.

OFF : Use to turn the wipers off.

1X (Mist): For a single wipe, briefly move the wiper lever down. For several wipes, hold the wiper lever down.

↓  : Pull the windshield wiper lever toward you to spray windshield washer fluid and activate the wipers.

Wiper Parking

If the wiper lever is in HI, LO or INT when the ignition is turned off the wipers will stop immediately

If the windshield wiper lever is then moved to OFF before the driver door is opened or within 10 minutes, the wipers will restart and move to the base of the windshield.

If the ignition is put in OFF while the wipers are performing wipes due to windshield washing, the wipers continue to run until they reach the base of the windshield.

↓  **(Windshield Washer)** : Pull the windshield wiper lever toward you to spray windshield washer fluid and activate the wipers. The wipers will continue until the lever is released or the maximum wash time is reached. When the windshield wiper lever is released, additional wipes may occur depending on how long the windshield washer had been activated. **SEE WASHER FLUID ⇒ 79** for information on filling the windshield washer fluid reservoir.

Power Outlets

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 either kilometers per hour (km/h) or miles per hour (mph).

Odometer



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

Trip Odometer



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

Press the trip odometer reset stem on the cluster to switch between the odometer and trip odometer. To reset the trip odometer to zero, press and hold the trip odometer reset stem while the trip odometer is displayed. Be careful not to reset the engine oil life monitor accidentally.

Tachometer

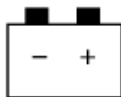
The tachometer displays the engine speed in revolutions per minute (rpm).

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 will come on. There is still a little fuel left, but the vehicle's fuel tank should be filled soon. **SEE LOW FUEL WARNING LIGHT ⇨ 40** for more information.

Charging System Light



This light will come on briefly when the ignition is turned on, and the engine is not running, as a check to show it is working.

It should go out when the engine is started. If it stays on, or comes on while driving, there may be a problem with the electrical charging system. Contact the Vanderhall Service department. Driving while this light is on could drain the battery. If a short distance must be driven with the light on, turn off all accessories, such as the radio and air conditioner, to help reduce the drain on the battery.

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. The light should come on to show that it is working when the ignition is in ON/RUN with the engine not running. SEE IGNITION POSITIONS
⇒ 54.



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.

If the light is flashing: A malfunction has been detected that could damage the emission control system and increase vehicle emissions. Diagnosis and service may be required.

To help prevent damage, reduce vehicle speed and avoid hard accelerations and uphill grades.

If the light continues to flash, find a safe place to park. Turn the vehicle off and wait at least 10 seconds before restarting the engine. If the light is still flashing, follow the previous guidelines and see your dealer for service as soon as possible.

If the light is on steady: A malfunction has been detected. Diagnosis and service may be required.

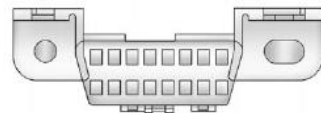
Check the following:

- A loose or missing fuel cap may cause the light to come on. SEE FILLING THE TANK ⇨ 64. 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 ⇨ 64.

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 light is on when the engine is running.
- The light does not come on when the ignition is in ON/RUN with the engine not 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.

Service Vehicle Soon Light



For vehicles with this light, it comes on if a condition exists that may require the vehicle to be taken in for service.

If the light comes on, contact Vanderhall Service as soon as possible.

Owner Manual Indicator



This symbol is shown when you need to see the owner manual for additional instructions or information.

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.



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 ⇒ 98**

Antilock Brake System (ABS) Warning Light



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 ⇒ 36.**

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.

Power Steering Warning Light



This light comes on briefly when the ignition is turned to ON/RUN as a check to show it is working. If it does not come on contact Vanderhall Service.

If this light stays on, or comes on while driving, the system may not be working. If this happens, contact Vanderhall Service.

Traction off Light



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/ELECTRONIC STABILITY CONTROL ⇒ 61.

Traction Control System (TCS) Light



The Traction Control System (TCS) 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 TCS, may have been disabled.

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

SEE TRACTION CONTROL/ELECTRONIC STABILITY CONTROL ⇒ 61.

Engine Coolant Temperature Warning Light



This light comes on briefly while starting the vehicle.

If it does not, contact Vanderhall Service. If the system is working normally the indicator light goes off.

Caution

The engine coolant temperature warning light indicates that the vehicle has overheated. Driving with this light on can damage the engine and it may not be covered by the vehicle warranty.

SEE ENGINE OVERHEATING ⇨ 78.

The engine coolant temperature warning light will come on when the engine has overheated. If this happens, pull over and turn off the engine as soon as possible.

SEE ENGINE OVERHEATING ⇨ 78.

Engine Oil Pressure Light



This light should come on briefly as the engine is started. If it does not come on, contact Vanderhall Service. If the light comes on and stays on, it means that oil is not flowing through the engine properly. The vehicle could be low on oil and might have some other system problem contact Vanderhall Service.

Caution

Lack of proper engine oil maintenance can damage the engine. Driving with the engine oil low can also damage the engine. Check the oil level as soon as possible. Add oil if required, but if the oil level is within the operating range and the oil pressure is still low, contact Vanderhall Service. Always follow the maintenance schedule for changing engine oil.

Low Fuel Warning Light



This light comes on for a few seconds when the ignition is turned on as a check to indicate it is working. If it does not come on, have it fixed. This light comes on when the vehicle is low on fuel. To turn the light off, add fuel to the fuel tank.

SEE FILLING THE TANK ⇨ 64

Immobilizer Light



The immobilizer light should come on briefly as the engine is started. If it does not

come on, there may be an issue with the system, contact Vanderhall Service. If the system is working normally, the indicator light turns off. If the light stays on and the engine does not start, there could be a problem with the immobilizer system. **SEE IMMOBILIZER OPERATION ⇨ 22.**

Reduced Engine Power Light



The reduced engine power light should come on briefly as the engine is started. If it does not come on, contact Vanderhall Service.

This light, along with the malfunction indicator lamp, displays when a noticeable reduction in the vehicle's performance occurs.

The vehicle can be driven at a reduced speed when the reduced engine power light is on but acceleration and speed might be reduced. If this light stays on, contact Vanderhall Service as soon as possible for diagnosis and repair.

High-Beam On Light



This light comes on when the high-beam headlamps are in use. **SEE HEADLAMP HIGH/LOW-BEAM CHANGER ⇨ 46.**

Daytime Running Lamps (DRL) Indicator Light



This light turns on whenever the Daytime Running Lamps are in use.

Lamps on Reminder



This light comes on when the exterior lamps are in use. **SEE EXTERIOR LAMP CONTROLS ⇨ 46.**

Cruise Control Light



For vehicles with cruise control, the cruise control light is white when the cruise control is armed, and turns green when the cruise control is set and active.

The light turns off when the cruise control is turned off. **SEE CRUISE CONTROL ⇨ 62.**

Door Ajar Light



This light comes on when a door is open or not securely latched. Before driving, check that both doors are fully closed.

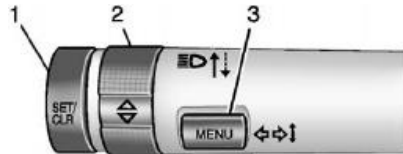
Information Displays

Driver Information Center (DIC)

The DIC displays information about your vehicle. It also displays warning messages if a system problem is detected. **SEE VEHICLE MESSAGES ⇨ 43.** All messages appear in the DIC display in the instrument cluster.

DIC Operation and Displays

The DIC has different displays which can be accessed by using the DIC buttons on the turn signal lever on the left side of the steering wheel. The DIC displays trip, fuel, and warning messages if a system problem is detected. **SEE TRIP COMPUTER ⇨ 44 AND VEHICLE MESSAGES ⇨ 43.**

DIC Buttons

1. **SET/CLR:** Press to set or clear the menu item displayed. This is not used to reset the trip odometer. To reset the trip odometer, use the reset button on the tachometer in the instrument cluster.
2. **△▽ (Band):** Turn the band to scroll through the menu items.
3. **MENU:** Press to display the DIC menus. This button is also used to return to or exit the last screen displayed on the DIC.

DIC Menu Items

Press MENU to view the DIC menus. Some items display in the upper display area, some in the lower display area, and others use both the upper and lower display areas. Use △▽ to scroll through the menu items. Not all items are available on every vehicle. The following is a list of all possible menu items:

- Units
- Language
- Tire Learn
- Remaining Oil Life

Units

This menu is only available while the vehicle is stationary. Press SET/CLR while the unit display is active and move △▽ to change units when UNIT SET is displayed. Press SET/ CLR to confirm the setting. You will have to select 1, 2, or 3 for the unit display. 1 is Imperial units, 2 is US units, and 3 is metric units. This will

change the displays on the cluster and DIC to the type of measurements you select.

Language

This menu is only available while the vehicle is stationary. Press SET/CLR while the language display is active and move w x to change the language of the displays when LANG SET is displayed. You will have to select 1 or 2 for the language display. 1 is Alphabet and 2 is Arabic Numeral. Press SET/ CLR to confirm the setting.

Remaining Oil Life

This menu is only available while the vehicle is stationary. This display shows an estimate of the oil's remaining useful life. If 99  % is displayed, that means 99% of the current oil life remains.

When the remaining oil life is low, the  % CHANGE message will appear on the display. The oil should be changed as soon as possible. **SEE ENGINE OIL ⇨ 71.**

In addition to the engine oil life system monitoring the oil life, additional maintenance is recommended in the Maintenance Schedule. **SEE MAINTENANCE SCHEDULE ➔ 101.**

Remember, the oil life display must be reset after each oil change. It will not reset itself. Also, be careful not to reset the oil life display accidentally at any time other than when the oil has just been changed. It cannot be reset accurately until the next oil change. To reset the engine oil life system, press the SET/CLR button while the oil life display is active. **SEE ENGINE OIL LIFE SYSTEM ➔ 71.**

Vehicle Messages

DIC messages display when the status of the vehicle has changed and action may be needed to correct the condition. Multiple messages appear one after another.

Press any of the DIC buttons on the turn signal lever to acknowledge and clear them from the display. More urgent messages cannot be cleared from the DIC display. All messages should be taken seriously. Clearing messages will not correct the problem. Vehicle messages appear as code numbers.

25 : Left Front Turn Signal Failure

26 : Left Rear Turn Signal Failure

27 : Right Front Turn Signal Failure

28 : Right Rear Turn Signal Failure

52 : Change Timing Belt

84 : Engine Power Is Reduced

89 : Service Vehicle Soon

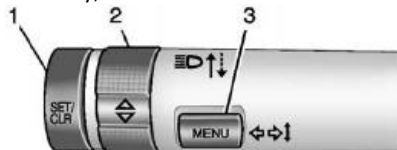
Engine Oil Messages

 % CHANGE

This message displays when the engine oil needs to be changed. When changing the engine oil, be sure to reset the Oil Life System. **SEE ENGINE OIL LIFE SYSTEM ➔ 72, ENGINE OIL ➔ 71, AND MAINTENANCE SCHEDULE ➔ 101**

Trip Computer

The trip computer is located in the Driver Information Center (DIC). It provides the driver with driving information such as average speed, fuel range, average fuel economy, and a timer.



- 1. SET/CLR:** Press to set or clear the menu item displayed. This is not used to reset the trip odometer. To reset the trip odometer, use the reset button on the tachometer in the instrument cluster.
- 2. $\triangle \nabla$ (Band):** Turn the band to scroll through the menu items.
- 3. MENU:** Press to display the DIC menus. This button is also used to return to or exit the last screen displayed on the DIC.

To operate the trip computer, turn band on the turn signal lever.

The following is a list of the trip computer items"

- . Average Speed
- . Fuel Range
- . Average Fuel Economy
- . Timer

Some items can be reset by pressing the SET/CLR button.

Average Speed



This display shows the average speed. To reset the average speed to zero, press and hold the SET/ CLR button while the average speed is displayed.

Fuel Range



This displays the approximate distance the vehicle can be driven without refueling. The fuel range estimate is based on an average of the vehicle's fuel economy and recent driving style as well as the amount of fuel remaining in the fuel tank.

Average Fuel Economy



45

This display shows the approximate average liters per 100 kilometers (L/ 100 km) or miles per gallon (mpg).

This number is calculated based on the number of L/100 km (mpg) recorded since the last time this menu item was reset. This number reflects only the approximate average fuel economy that the vehicle has right now, and will change as driving conditions change. To reset the average fuel economy, press and hold the SET/ CLR button while the average fuel economy is displayed.

Timer



This display can be used as a timer. To start/stop the timer, press SET/ CLR while the timer is displayed. The display will show the amount of time that has passed since the timer was last reset, not including time the ignition is off. The timer will record up to 99:59 hours, after which the display will return to zero. To reset the timer to zero, press and hold SET/CLR.

Lighting

Exterior Lighting

Headlamps	46
Headlamp High/ Low-Beam Changer	46
Momentary High Beams	46
Hazard Warning Flash	47
Turn And Lane Change Signals	48

Lighting Features

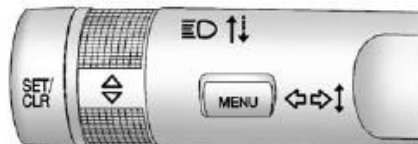
Battery Load Management	48
Battery Power Protection	48
Exterior Lighting	
Battery Saver	48

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.

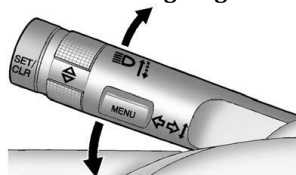
Hazard Warning Flashers



(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.

An arrow on the instrument cluster will flash in the direction of the turn or lane change.

Raise or lower the lever until the arrow 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 ⇨ 85**

Turn Signal On Chime

If the turn signal is left on for more than 1.2 km (0.75 mi), a chime will sound at each flash of the turn signal. To turn the chime off, move the turn signal lever to the neutral position.

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. If the vehicle has a voltmeter gauge or a voltage display on the Driver Information Center (DIC), you may see the voltage move up or down. This is normal. If there is a problem, an alert will be displayed. 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.

If some interior lamps are left on and the ignition is turned off, the battery rundown protection system automatically turns the lamp off after some time.

Exterior Lighting Battery Saver

The exterior lamps turn off about 10 minutes after the ignition is turned off, if the parking lamps or headlamps have been manually left on. This protects against draining the battery. To restart the 10-minute timer, turn the exterior lamp control to the off position and then back to the parking lamp or headlamp position.

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

Bluetooth® Audio

Blue Tooth Audio

Introduction	50
Pairing Devices	50
Steering Wheel Controls	50

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

Pairing an Audio device with:

- Turn the Ignition Switch to Accessory or Run
SEE IGNITION POSITIONS ⇒ 54
- Using a Bluetooth audio device connect to “StreamBlue”

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

The Audio system can be controlled with the Steering Wheel controls adjusted at the steering wheel.

Steering Wheel Controls



 /  : Is non-functional

 /  : Is non-functional

 **SRC**  : Press up or down to go to the next or previous Bluetooth audio file.

Press and hold up or down to fast forward or reverse.

+  - : Press + or - to increase or decrease the volume.

Climate Controls

Climate Control Systems

Climate Control Interface

Air Vents

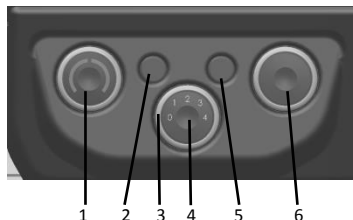
Heated Seats

51

52

52

Climate Control Systems



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

1. Temperature Control
2. Air Conditioning
3. Fan Control
4. Non-Functional
5. Non-Functional
6. Air Delivery Mode Control

Climate Control Interface

Temperature Control : Turn clockwise or counterclockwise to increase or decrease the temperature.

 **(Fan Control)** : Turn clockwise or counterclockwise to increase or decrease the fan speed. Turning the fan control to 0 turns the fan off.

Air Delivery Mode Control: Turn clockwise or counterclockwise to change the current airflow mode. Select from the following air delivery modes:

 **(Vent):** Air is directed to the dash vents.

 **(Bi-Level):** Air is divided between the floor and the dash vents

 **(Floor):** Air is directed to the floor outlets.

 **(Defog):** This mode clears the windows of fog or moisture. Air is directed to the floor, and windshield.

 **(Defrost):** This mode clears the windshield of fog or frost more quickly. Air is directed to the windshield.

 **(Air Conditioning) :** to use the system. Turn  to the desired speed. Press  to turn the air conditioning on and off. When  is pressed, an indicator light comes on to show that the air conditioning is on.

Air Vents

Use the air vents located in the center and on the side 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

The Controls for the heated seats are located on the driver and passenger doorsill

To Turn on the heated seats press the  button. Three lights will appear on the button indicating the heater is on High

Press a second time 2 lights will appear on the button indicating Medium heat

Pressing the button a third time 1 light will be illuminated indicating Low heat

Pressing the button a fourth time will turn the Heated seats off

Driving and Operation

Starting and Operation

New Vehicle Break-In	54
Ignition Positions	54
Starting the Engine	55

Transmission

Automatic Transmission	58
Manual Mode	59

Brakes

Antilock Brake System (ABS)	60
Parking Brake	60

Vehicle Control Systems

Traction Control	61
------------------	----

Cruise Control

Cruise Control	62
----------------	----

Fuel

Fuel	64
Prohibited Fuels	64
Filling the Tank	64

Starting and Operation

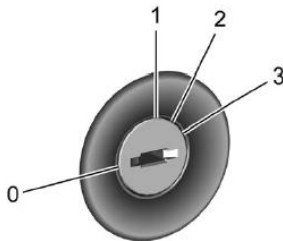
New Vehicle Break-In

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 every time you get new brake linings.

Ignition Positions



The ignition switch has four different positions.

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, turn the ignition switch to LOCK/ OFF to turn the engine off.

This position locks the ignition, steering wheel and transmission.

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). Turn the ignition to LOCK/OFF.
4. Set the parking brake. **SEE PARKING BRAKE ⇨ 60.**

If the vehicle cannot be pulled over, and must be shut off while driving, turn the ignition 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.

Caution

Using a tool to force the key to turn in the ignition could cause damage to the switch or break the key. Use the correct key, make sure it is all the way in, and turn it only with your hand. If the key cannot be turned by hand, see your dealer.

1 (ACC/ACCESSORY): This is the position in which things like the radio and the windshield wipers can be operated when the engine is off.

2 (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.

If you leave the key in the 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.

3 (START): This is the position that starts the engine. When the engine starts, release the key. The ignition switch returns to ON/RUN for driving.

A warning tone will sound when the driver door is opened, the ignition is in ACC/ACCESSORY or LOCK/ OFF, and the key is in the ignition. If the ignition becomes difficult to turn, **SEE KEYS ⇨ 18.**

Starting the Engine

Move the shift lever to P (Park) or N (Neutral). To restart the engine when the vehicle is already moving, use N (Neutral) only.

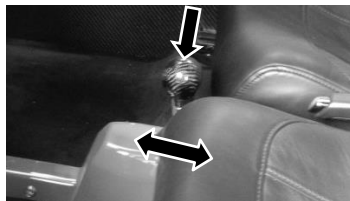
Caution

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

Shifting out of Park

This vehicle is equipped with a shift lock control. The shift lock control is designed to:

- Prevent ignition key removal unless the shift lever is in P (Park)
- 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. See Jump Starting – North America 0 287.

To shift out of P (Park):

1. Apply the brake pedal.
2. Turn the ignition 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. Turn the ignition key to LOCK/OFF.

Remove the key and take it with you. If you can leave the vehicle with the ignition key in your hand, the vehicle is in P (Park).

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 yours 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



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 key is in 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.

M (Manual Mode): This position allows you to change gears similar to a manual transmission

Manual Mode

To use this feature:

1. Move the shift lever from D (Drive) rearward to M(Manual Mode).

While driving in manual mode, the transmission will remain in the driver selected gear. When coming to a stop in the manual position, the vehicle will automatically shift into 1 (First) gear.

2. Pull the right hand lever located behind the steering wheel to up shift, or the left hand lever to down shift

The Driver Information Center (DIC) in the instrument cluster will change from the currently displayed message to the letter "M," for Manual position, and a number indicating the current gear.

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 ➔37.**

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.

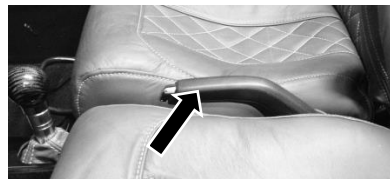
Using ABS

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 0 102.

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

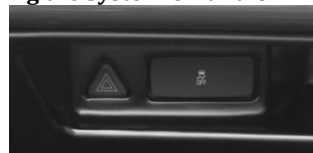
The vehicle has a Traction Control System (TCS) which is designed to limit wheel slip. TCS activates if it senses that any of the drive wheels are spinning or beginning to lose traction. When this happens, TCS applies the brakes to the spinning wheels and reduces engine power to limit wheel spin.

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 while they are operating or while performing diagnostic checks,

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

Turning the System Off and On



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

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

To turn TCS on again, press and release the  button. The traction off light  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.

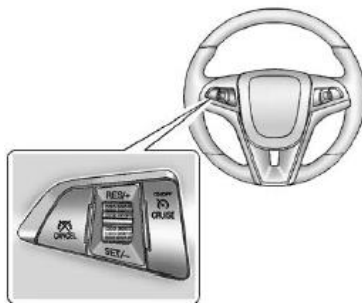
Cruise Control

Cruise Control

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.



CRUISE (On/Off) : Press to turn the cruise control system on and off. A white indicator comes on in the instrument cluster when cruise is turned on.

RES/+ (Resume/Accelerate): If there is a set speed in memory, move the thumbwheel up briefly to resume to that speed or hold upward to accelerate. If cruise control is already active, use to increase vehicle speed.

SET/ – (Set/Coast): Move the thumbwheel down briefly to set the speed and activate cruise control. If cruise control is already active, use to decrease speed.



CANCEL (Cancel) : Press to disengage cruise control without erasing the set speed from memory.

Setting Cruise Control

To set cruise control:



1. Press **CRUISE** to turn the cruise system on.
2. Bring the vehicle to the speed desired.
3. Move the thumbwheel down to SET/- and release it.
4. Take your foot off the accelerator pedal.

The cruise control indicator on the instrument cluster turns green after cruise control has been set to the desired speed.

SEE INSTRUMENT CLUSTER ⇒ 32.

Resuming a Set Speed

If the cruise control is set at a desired speed and then the brakes are applied or  is pressed, the cruise control is disengaged without erasing the set speed from memory

Once the vehicle reaches about 25 mph (40 km/h) or more, move the thumbwheel up toward RES/+ briefly. The vehicle returns to the previous set speed.

Increasing Speed While Using Cruise Control

If the cruise control system is already activated:

- Push the thumbwheel upward (RES/+) and hold it until the desired speed is reached, then release the thumbwheel.

- To increase the vehicle speed in small increments, move the thumbwheel upward (RES/+) briefly and then release it. For each press, the vehicle goes about 1 mph (1.6 km/h) faster.

Reducing Speed While Using Cruise Control

If the cruise control system is already activated:

- Press the thumbwheel downward (SET/-) and hold it until the desired lower speed is reached, then release the thumbwheel.
- To decrease the vehicle speed in smaller increments, move the thumbwheel downward (SET/-) briefly and then release it. For each press, the vehicle goes about 1 mph (1.6 km/h) slower.

Pressing the Accelerator while using Cruise Control

Use the accelerator pedal to increase the vehicle speed. When you take your foot off the pedal, the vehicle will slow down to the previous set cruise control speed.

To override cruise control, briefly moving the thumbwheel downward (SET/-) will set the cruise control to the current 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



Warning

Fuel vapors and fuel fires burn violently and can cause injury or death.

- To help avoid injuries to you and others, read and follow all the instructions on the fuel pump island.
- Turn off the engine when refueling.
- Keep sparks, flames, and smoking materials away from fuel.
- Do not leave the fuel pump unattended.
- Do not use a cell phone while refueling.
- Do not reenter the vehicle while pumping fuel.
- Keep children away from the fuel pump and never let children pump fuel.



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 trunk lid,

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 ⇨93.**

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 Care

General Information

California Proposition	
65 Warning	67
California Perchlorate	
Materials Requirement	67
Accessories and	
Modifications	67

Vehicle Checks

Hood	67
Engine Compartment	
Overview	69
Engine Oil	71
Engine Oil Life System	72
Automatic Transmission	
Fluid	74
Engine Air Filter	74
Engine Coolant	75
Engine Overheating	78
Washer Fluid	79

Brakes	80
Brake Fluid	80
Battery	82
Vehicle Storage	83
Wiper Blade Replacement	83

Exterior Lighting

Headlight Aiming	84
Bulb Replacement	84

Electrical System

Electrical System Overload	85
Fuses and Circuit Breakers	85
Engine Compartment	
Fuse Block	86
Instrument Panel	
Fuse Block	88

Wheels and Tires

Tires	89
Tire Pressure	90
Tire Inspection	91
Buying New Tires	91

Jump Starting

Jump Starting	92
---------------	----

Appearance Care

Exterior Care	93
Interior Care	96

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

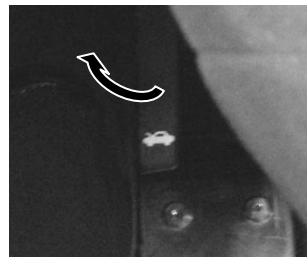
Accessories and Modifications

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

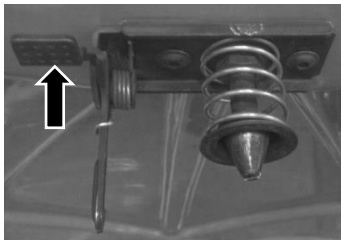
Vehicle Checks

Hood

To open the hood:



1. Pull the hood release handle inside the vehicle. It is located on the lower left side of the dash



1. Go to the front of the vehicle and move the secondary hood release lever upward.
2. Lift the hood and locate the hood prop at the rear right of the hood. Push the knob back until it stops. Slowly lower the hood while ensuring the hood prop is holding the hood up.

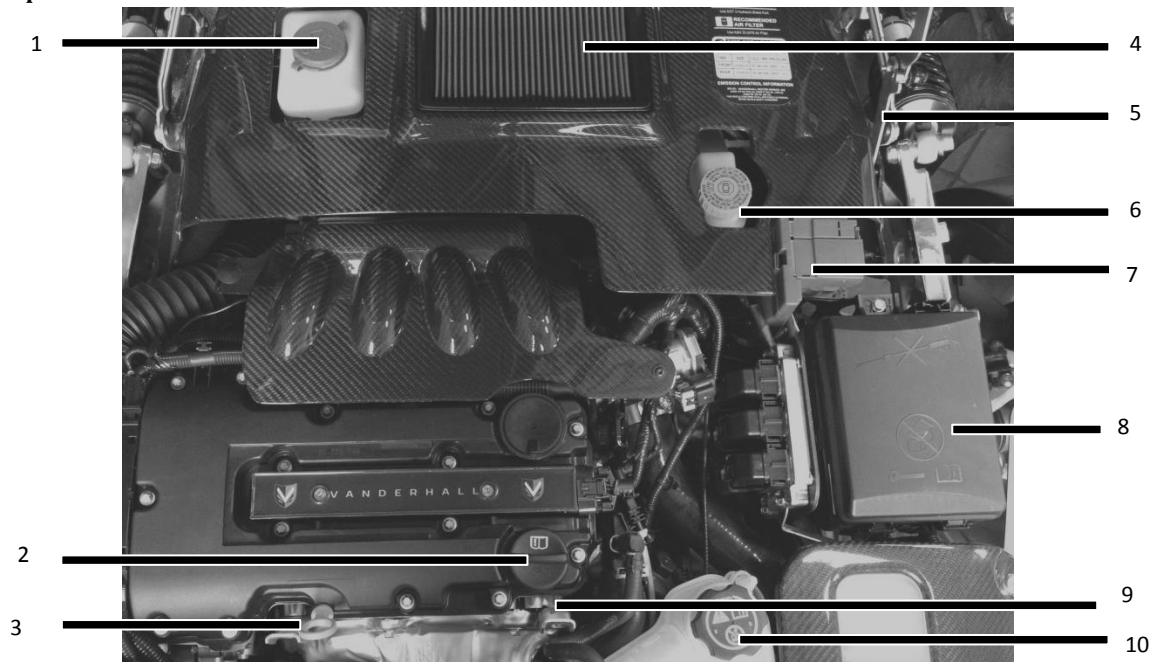


To close the hood:

1. Before closing the hood, be sure all filler caps are on properly. Then, lift the hood to relieve pressure on the hood prop. Remove the hood prop grasp the knob on the hood prop and pull toward the front of the vehicle.
Slowly lower the hood and watch to ensure the hood prop is folding
2. Lower the hood to within 12 in (30 cm) above the vehicle and drop the hood.

Ensure the hood has fully latched before driving. If not repeat the process

Engine Compartment Overview



1. Windshield Wiper Fluid Reservoir 2. Engine Oil Fill Cap 3. Engine Oil Dipstick	4. Engine Air Filter 5. Hood Stay 6. Brake Fluid Reservoir	7. Positive Jump Start Post 8. Fuse box 9. Negative Jump start Post 10. 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. SEE ENGINE OIL LIFE SYSTEM ⇒ 72.
- Always dispose of engine oil properly. See “What to Do with Used Oil” in this section



If the engine oil pressure light comes on, check the engine oil level right away. The oil pressure light is on the instrument cluster. SEE ENGINE OIL PRESSURE LIGHT ⇒ 39. Check the engine oil level regularly; this is an added reminder.

Checking Engine Oil

It is a good idea to check the engine oil level at each fuel fill. 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 ⇒ 69 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.

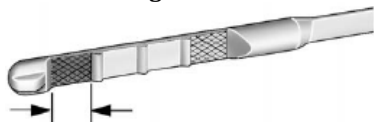


Warning

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 ⇒ 109.**

SEE ENGINE COMPARTMENT OVERVIEW ⇒ 69 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 ⇒ 106.**

Viscosity Grade

Use SAE 5W-30 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.

Engine Oil Life System When to Change Engine Oil

This vehicle has a computer system that indicates when to change the engine oil and filter. This is based on a combination of factors which include engine revolutions, engine temperature, and miles driven. Based on driving conditions, the mileage at which an oil change is indicated can vary considerably. For the oil life system to work properly, the system must be reset every time the oil is changed.

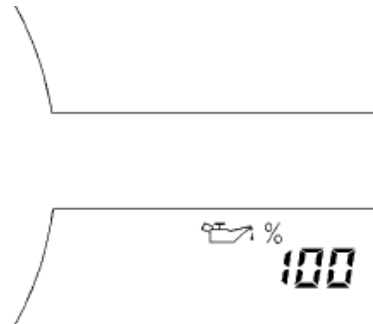
When the system has calculated that oil life has been diminished, it indicates that an oil change is necessary. A  %CHANGE message in the DIC comes on. **SEE VEHICLE MESSAGES ⇨ 43**

Change the oil as soon as possible within the next 600 mi (1 000 km). It is possible that, if driving under the best conditions, the oil life system might indicate that an oil change is not necessary for up to a year. The engine oil and filter must be changed at least once a year and, at this time, the system must be reset. Your dealer has trained service people who will perform this work and reset the system. It is also important to check the oil regularly over the course of an oil drain interval and keep it at the proper level.

If the system is ever reset accidentally, the oil must be changed at 3,000 mi (5 000 km) since the last oil change. Remember to reset the oil life system whenever the oil is changed.

How to Reset the Engine Oil Life System
Reset the system whenever the engine oil is changed so that the system can calculate the next engine oil change. To reset the system:

1. Press the MENU button to show Remaining Oil Life on the display. This display shows an estimate of the oil's remaining useful life. If 99% is displayed, that means that 99% of the current oil life remains.
2. To reset the engine oil life system, press the SET/CLR button while the oil life display is active. After a few seconds, there will be a single chime and the oil life will be reset to 100%.



Be careful not to reset the oil life display accidentally at any time other than after the oil is changed. It cannot be reset accurately. If the  %CHANGE message in the DIC comes back on when the vehicle is started, the engine oil life system has not reset. Repeat the procedure.

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 ⇒ 101**, and be sure to use the fluid listed in **RECOMMENDED FLUIDS AND LUBRICANTS ⇒ 106**.

Engine Air Filter

The engine air filter is located at the center rear of the engine compartment. **SEE ENGINE COMPARTMENT OVERVIEW ⇒ 69**

When to Inspect the Engine Air Cleaner/Filter

For intervals on changing and inspecting the engine air filter, **SEE MAINTENANCE SCHEDULE ⇒ 101**

How to Inspect and clean the Engine Air Filter

Do not start the engine or have the engine running with the engine air filter housing open. 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. The Air filter can be cleaned and recharged however, do not clean the air filter housing with water or compressed air.

To remove the air filter:

1. Grasp the filter and lift it out of the filter housing

To install the air filter

1. carefully press the filter in to the housing until it is fully seated.

To clean and recharge the air filter

1. Remove the airfilter
2. Liberally spray Filter Cleaner onto both sides of filter and allow to soak for 10 minutes to loosen the dirt. Do not allow cleaner to dry on air filter
3. Rinse the air filter with cool low-pressure water applied from the inside of the filter in order to

flush the dirt out of the filter.

Continue to rinse the filter until all traces of cleaner are gone. It may be necessary to repeat steps 2 and 3

4. After rinsing your filter, gently shake off the excess water and only allow filter to dry naturally. Do not apply oil until the air filter is completely dry.
5. Spray the oil evenly along the crown of each pleat holding nozzle about 3" away. Allow oil to wick for approximately 20 minutes. Touch up any light areas on either side of the filter until there is a uniform red color at all areas.
6. Reinstall the Airfilter

Contact Vanderhall Service for a cleaning kit

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 ⇨ 78.**

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 ⇒ 106.**

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 engine parts you could be badly burned.



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.

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.

2. Fill the coolant surge tank to the indicated level mark with the proper DEX-COOL coolant mixture.



3. 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.

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.

4. Replace the pressure cap tightly.

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

The vehicle has an indicator to warn of the engine overheating.

If the decision is made not to lift the hood when this warning appears, get service help right away.

Caution
Running the engine while it is overheating could cause engine damage or a fire. Pull the vehicle over as soon as it can be safely done

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

If the engine overheat warning is displayed but no steam is evident, the problem may not be very serious. Sometimes the engine can overheat when the vehicle:

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

If the overheat warning is displayed with no sign of steam:

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.

Washer Fluid

What to Use

When the vehicle needs windshield washer fluid, and the vehicle will be operated or stored in an area where the temperature may fall below freezing, use a fluid that has protection against freezing.

Adding Washer Fluid



Open the cap with the washer symbol on it. Add washer fluid until the tank is full. **SEE ENGINE COMPARTMENT OVERVIEW ⇒ 69** for reservoir location.

Caution

Do not use washer fluid that contains any type of water repellent coating. This can cause the wiper blades to chatter or skip.
Fill the washer fluid tank only three-quarters full when it is very cold or the vehicle is going into storage. This allows for fluid expansion if freezing occurs, which could damage the tank if it is completely full.

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 maybe 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 → 69** for the location of the reservoir.

There are only two reasons why the brake fluid level in the reservoir might be low:

- 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 preform 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.

When the brake fluid falls to a low level, the brake warning light will come on. SEE BRAKE SYSTEM WARNING LIGHT ⇨ 36.

Brake fluid absorbs water over time. Replace brake fluid at the specified intervals to maintain optimal brake performance. SEE MAINTENANCE SCHEDULE ⇨ 101.

What to Add

Use only DOT 3 brake fluid from a clean, sealed container. SEE RECOMMENDED FLUIDS AND LUBRICANTS ⇨ 106.



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 cap and area around the brake resivor before opening.

Caution

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

Battery



The battery is located in its own compartment. This compartment can be accessed by:

- Sliding the passenger seat all the way forward.
- Removing the backrest carpet.
- Removing the battery compartment door there are 4 10mm bolts securing the door.

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

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 67**

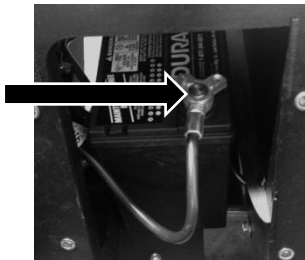
Warning

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 - 0 287 for tips on working around a battery without getting hurt.

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, remove the battery compartment door see Battery in this section. Disconnect the negative (-) battery cable



Wiper Blade Replacement

Windshield wiper blades should be inspected for wear or cracking. SEE THE MAINTENANCE SCHEDULE ⇒ 101 for more information. Replacement blades come in different types and are removed in different ways. For proper windshield wiper blade length and type, SEE MAINTENANCE REPLACEMENT PARTS ⇒ 107.

To replace the windshield wiper blade:

1. Pull the windshield wiper assembly away from the windshield.
2. Squeeze the tabs on each side of the wiper blade assembly and rotate the hood up



3. Push the wiper blade down toward the windshield. Exposing the J hook on the wiper arm.



4. Pull the wiper blade up and free of the wiper arm.
5. Insert the J hook in to the new wiper blade pulling up to ensure the J hook is seated.
6. Rotate the hood down until a click is heard
7. Carefully lower the wiper blade back on to the windshield

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.

If there is a problem on the road and a fuse needs to be replaced, the same amperage

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.

Windshield Wipers

If the wiper motor overheats, the windshield wipers will stop until the motor cools and will then restart. If the overload occurs on a regular basis contact Vanderhall Service

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

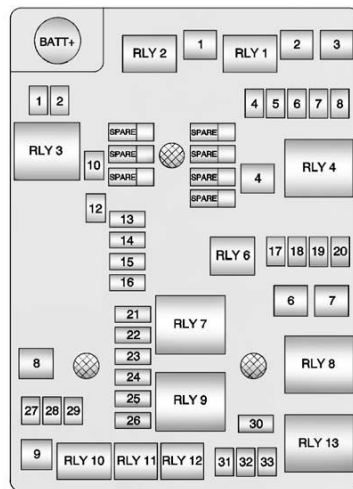


The engine compartment fuse block is on the driver side of the vehicle.

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.



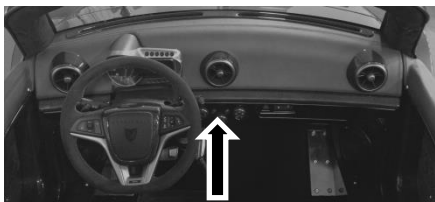
Mini Fuses	Usage
1	Antilock Brake System Valve
2	Not Used
4	Not Used
5	Regulated Voltage Control
6	Antilock Brake System Fluid
7	Not Used
8	Not Used
10	Not Used
12	Not Used
13	Heated Seats
14	Fuel System Control Module 1
15	Flex Fuel
16	Washer
17	Fuel Pump
18	Engine Control Module 5
19	Fuel System Control Module 2
20	Transmission Control Module 1

Mini Fuses	Usage
21	Engine Control Module 1
22	Coil
23	Engine Control Module 4
24	Engine Control Module 3
25	Engine Control Module 2
26	Injector/Ignition Coil
27	Engine Control Module
28	Air Conditioning Compressor Clutch
29	Transmission Control Module
30	Horn
31	Not Used
32	Left High Beam
33	Right High Beam
Spare	Spare

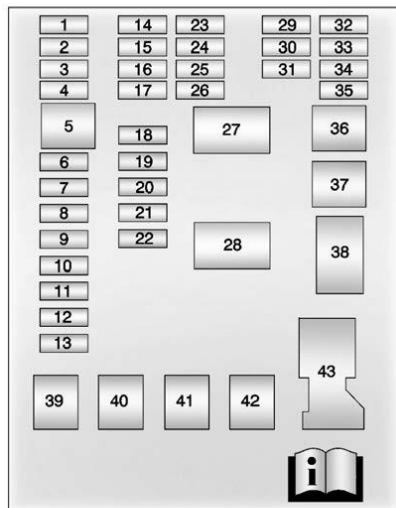
J-Case Fuses	Usage
1	Antilock Brake System Pump
2	Wiper
3	Blower
4	Run/Crank IEC
6	Cooling Fan K5
7	Cooling Fan K4
8	EVP
9	Start

Relay	Usage
RLY 1	Front Wiper Control Relay
RLY 2	Front Wiper Speed Relay
RLY 3	Not Used
RLY 4	Run/Crank Relay
RLY 6	Fuel Pump Relay
RLY 7	Cooling Fan K2 Relay
RLY 8	Cooling Fan K3 High Current Relay
RLY 9	Powertrain Relay
RLY 10	Start High Current Relay
RLY 11	Air Conditioning Compressor Clutch Relay
RLY 12	High-Beam Relay
RLY 13	Cooling Fan K1 Relay

Instrument Panel Fuse Block



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



Number	Usage
1	DLIS
2	Data Link Connector
3	Not Used
4	Not Used
5	Spare
6	Body Control Module 8
7	Body Control Module 7
8	Body Control Module 6
9	Body Control Module 5
10	Body Control Module 4
11	Body Control Module 3
12	Body Control Module 2
13	Body Control Module 1
14	Instrument Cluster
15	Not Used
16	Not Used
17	Not Used
18	Audio
19	Not Used
20	Not Used

Number	Usage
21	Not Used
22	Heating, Ventilation, Air Conditioning
23	HDLP ALC
24	Not Used
25	Instrument Cluster
26	Run/Crank
27	Run Relay
28	Trunk Release
29	Not Used
30	Horn clock Spring
31	Heating, Ventilation, and Air Conditioning
32	Spare
33	Not Used
34	Accessory Power
35	Spare
36	Not Used
37	Not Used
38	RAP/ACCY
39	Not Used
40	Not Used

Number	Usage
41	PTC2
42	PTC1
33	Battery connector

Wheels and Tires

Tires

This vehicle comes with high performance R compound. These tires have a special tread and compound that are optimized for dry road performance. This compound will have decreased performance in cold or wet weather. For additional information refer to the tire manufacturer.

Warning

Poorly maintained and improperly used tires are dangerous.

(Continued)

Warning

- 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.

Recommended Inflation Pressure:

Vehicle manufacturer's recommended tire inflation pressure as shown on the tire placard see Tire Pressure in this section.

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: (Continued)

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

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

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

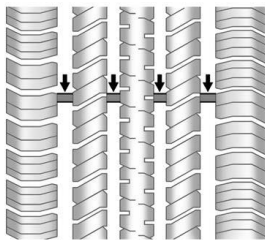
We recommend that the tires be inspected for signs of wear or damage at least once a month.

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.



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

Jump Starting

Jump Starting

For more information about the vehicle battery, SEE BATTERY ⇨ 82.

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.



Negative



Positive

See Engine Compartment ⇨ 70

2. Connect the Negative Post of the discharged vehicle to the Negative Post of the Good battery
3. Connect the Positive Post of the discharged vehicle to the Positive Post of the Good battery

The jump start positive post and negative post are on the battery of the vehicle providing the jump start.

The positive jump start connection for the discharged vehicle is under a trim cover. Open the cover to expose the terminal.

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 ⇨ 57

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 on the discharged battery.
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 negative (-) post 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.

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, metal, or carbon 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

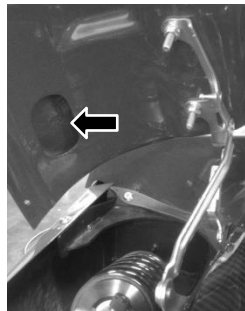
Use only lukewarm or cold water, a soft cloth, and an automotive soap to clean exterior lamps and emblems. Follow instructions under "Washing the Vehicle" previously in this section.

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.

Air Intakes



Clear debris from the air intakes, located at the bottom of the hood near the hinges

Windshield and Wiper Blades

Clean the outside of the windshield with glass cleaner.

Clean rubber blades using a lint-free cloth soaked a mild detergent.

Replace the wiper blades if they are worn or damaged

SEE WIPER BLADE REPLACEMENT ⇨ 83

Weatherstrips

Apply Dielectric silicone grease on weatherstrips to make them last longer, seal better, and not stick or squeak. Lubricate weatherstrips a least once a year. Hot, dry climates may require more frequent application. Black marks from rubber material on painted surfaces can be removed by rubbing with a clean cloth. **SEE RECOMMENDED FLUIDS AND LUBRICANTS ⇨ 106.**

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, 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.

Body Component Lubrication

Lubricate all hood hinges, trunk hinges, and door hinges. Applying silicone grease on weatherstrips with a clean cloth will make them last longer, seal better, and not stick or squeak.

Carbon Body Panel Damage

If the vehicle is damaged contact Vanderhall Service for replacement parts.

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. For liquid cleaners, use approximately 20 drops per 3.8 L (1 gal) of water.

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.

Interior Glass

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.

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

Interior Trim

Coated moldings should be cleaned.

- When lightly soiled, wipe with a sponge or soft, lint-free cloth dampened with water.
- When heavily soiled, use warm soapy water.

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.

Caution

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 and Maintenance

Maintenance Schedule

Owner checks	99
Engine Oil Change	100
Maintenance schedule	101

Additional Maintenance

Battery	103
Belt	103
Brakes	103
Fluids	103
Hoses	103
Lamps	103
Shocks	105
Tires	105
Vehicle care	105
Wheel Alignment	105
Windshield	105
Wiperblades	105

Recommended Fluids

Recommended Fluids And lubricants	106
--------------------------------------	-----

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

At Each Fuel Stop

- Check the engine oil level. SEE ENGINE OIL ⇨ 71.

Once a Month

- Check the tire inflation pressures. SEE TIRE PRESSURE ⇨ 90.
- Inspect the tires for wear. SEE TIRE INSPECTION ⇨ 91.
- Check the windshield washer fluid level. **See Washer Fluid 0 237**

Engine Oil Change

When a  %CHANGE message displays in the DIC, have the engine oil and filter changed within the next 1 000 km/600 mi. If driven under the best conditions, the engine oil life system may not indicate the need for vehicle service for up to a year. The engine oil and filter must be changed at least once a year and the oil life system must be reset. Your trained dealer technician can perform this work. If the engine oil life system is reset accidentally, service the vehicle within 5 000 km/ 3,000 mi since the last service. Reset the oil life system when the oil is changed. See Engine Oil Life System 0 228.

Maintenance Schedule

 VANDERHALL	7,500 Miles	15,000 Miles	22,500 Miles	30,000 Miles	37,500 Miles	45,000 Miles	52,500 Miles	60,000 Miles	67,500 Miles	75,000 Miles	82,500 Miles	90,000 Miles	97,500 Miles	105,000 Miles	120,000 Miles	127,500 Miles	135,000 Miles	142,500 Miles	150,000 Miles
Check engine oil level and oil life percentage. 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 evaporative control system						✓						✓					✓		
Inspect engine belts for fraying, excessive cracks (or every 10 years, whichever occurs first)																			✓

Maintenance Schedule (Imperial Units)



	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 and oil life percentage. 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 evaporative control system						✓						✓					✓		
Inspect engine belts for fraying, excessive cracks (or every 10 years, whichever occurs first)																			✓

Maintenance Schedule (Metric Units)

Additional Maintenance and Care

Your vehicle is an important 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 ⇨ 82 AND VEHICLE STORAGE ⇨

83

Belt

- The Belt may need replacing if they squeak or show signs of cracking or splitting.
- A message may indicate when scheduled maintenance on the timing belt and other components is required.

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 ⇨ 106**

- Engine oil and windshield washer fluid levels should be checked at every fuel fill.
- 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 treadwear 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 ⇨ 96 AND EXTERIOR CARE ⇨ 93.](#)

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.

Wiper Blades

Wiper blades need to be cleaned and kept in good condition to provide a clear view.

- Signs of wear include streaking, skipping across the windshield, and worn or split rubber.

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. <u>SEE ENGINE OIL ⇨ 71</u>
Engine Coolant	50/50 mixture of clean, drinkable water and use only DEX-COOL® Coolant. <u>SEE ENGINE COOLANT ⇨ 75.</u>
Hydraulic Brake System	DOT 3 Hydraulic Brake Fluid
Windshield Washer	Automotive windshield washer fluid that meets regional freeze protection requirements.
Automatic Transmission	DEXRON®-VI Automatic Transmission Fluid.
Chassis Lubrication	Lubricant meeting requirements of NLGI #2, Category LB or GC-LB.
Hood Latch Assembly, Secondary Latch, Pivots, Spring Anchor, and Release Pawl	Lubriplate Lubricant or lubricant meeting requirements of NLGI #2, Category LB or GC-LB.
Hood and Door Hinges	Multi-Purpose Lubricant
Weatherstrip Conditioning	Weatherstrip Lubricant or Dielectric Silicone Grease

Maintenance Replacement Parts

Replacement parts identified below by name, part number, or specification can be obtained from your dealer.

Maintenance Replacement Parts

Part	Part Number
Engine Air Filter	K&N 33-2476
Engine Oil Filter	PF2257G
Spark Plugs	41-121
Wiper Blades	
Driver (13 in)	13A
Passenger (13 in)	13A

Technical Data

Vehicle Identification

Vehicle Identification Number (VIN).....	108
---	-----

Vehicle Data

Capacities and Specifications	109
Engine Belt Routing	110

Vehicle Identification

Vehicle Identification Number (VIN)

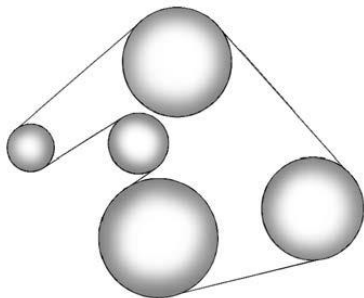
INVALID0XGH190000

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

Vehicle Data**Capacities and Specifications**

The following approximate capacities are given in metric and English conversions. SEE RECOMMENDED FLUIDS AND LUBRICANTS ⇒ 106. 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.		

Engine Belt Routing**1.4L L4 Engine**

Customer Information

Customer Satisfaction	111
Warranty	111
Radio Frequency Statement	111
Reporting of Safety defects	112
Vehicle Data Recording and Privacy	112
Emission System Warranty Statement (Motorcycle)	112

Customer Satisfaction

Your satisfaction is important to Vanderhall Motorworks. If you should have any concerns with your vehicle please contact the Vanderhall customer service department at info@vanderhallusa.com. Your Vanderhall customer service representative will work closely with you to resolve any issues.

Warranty

Refer to the Vanderhall Laguna Warranty document for details

Radio Frequency Statement

This vehicle has systems that operate on a radio frequency that complies with Part 15/Part 18 of the Federal Communications Commission (FCC) rules and with Industry Canada Standards RSS-GEN/210/216/220/251/310, ICES-001.

Operation is subject to the following two conditions:

1. The device may not cause harmful interference.
2. The device must accept any interference received, including interference that may cause undesired operation of the device.

Changes or modifications to any of these systems by other than an authorized service facility could void authorization to use this equipment.

Reporting of safety defects

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

Vanderhall Motorworks,
3500 Mountain Vista Pkwy
Provo, UT 84606
info@vanderhallusa.com

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

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

or write to: NHTSA, 1200 New Jersey Avenue SE W43-488, Washington, D.C. 20590. You can also obtain other information about motor vehicle safety from the Hotline.

Vehicle Data Recording and Privacy
The vehicle has a number of computers that record information about the vehicle's performance and how it is driven. For example, the vehicle uses computer modules to monitor and control engine and transmission performance this information can be used to provide antilock braking to help the driver control the vehicle. These modules may store data to help the technician service the vehicle. Some modules may also store data about how the vehicle is operated, such as rate of fuel consumption or average speed.

Emission System Warranty Statement (Motorcycle)

DISTRIBUTOR'S LIMITED WARRANTIES EMISSION CONTROL SYSTEMS

The California Air Resources Board and Vanderhall Motor Works are pleased to explain the emission control system warranty on your 2016 motorcycle. In California, new motorcycles must be designed, built and equipped to meet the State's stringent anti-smog standards. Vanderhall Motor Works must warrant the emission control system on your motorcycle for the period of time listed below provided there has been no abuse, neglect, or improper maintenance of your motorcycle.

Your emission control system may include parts such as the carburetor or fuel injection system, the ignition system, catalytic converter, and engine computer. Also included may be hoses, belts, connectors, and other emission related assemblies. Vanderhall Motor Works provides the same warranty coverage to all motorcycle owners, regardless of where the motorcycle is registered.

Your Warranty Rights and obligations:

In the United States new motorcycles must be designed, built and equipped to meet stringent federal anti-smog standards. Vanderhall Motor Works must warrant the emissions control system on your motorcycle for the periods of time listed below, provided there has been no abuse or neglect of your motorcycle. Your emissions control system may include parts such as the sensors, the ignition and the engine

computer. Also included may be hoses, connectors and other emissions-related assemblies. Where a warrantable condition exists, Vanderhall Motor Works will repair your motorcycle at no cost to you, including diagnosis, parts, and labor.

Manufacturer's Warranty Coverage:

If any emissions-related part on your vehicle is defective, the part will be repaired or replaced by Vanderhall Motor Works. This is your emissions control system DEFECTS WARRANTY.

Owner's Warranty Responsibilities:

As the motorcycle owner, you are responsible for the performance of the required maintenance listed in your Owner's Manual. Vanderhall Motor Works recommends that you retain all receipts

covering maintenance on your motorcycle, but Vanderhall Motor Works cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance. You are responsible for presenting your motorcycle to a Vanderhall Motor Works dealer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed, 30 days.

Emission system Warranty Statement (Motorcycle):

As the motorcycle owner, you should also be aware that Vanderhall Motor Works may deny you warranty coverage if your motorcycle or a part has failed due to unapproved modifications. If you have any questions regarding your warranty rights and responsibilities or if an authorized

Vanderhall Motor Works dealer cannot repair your motorcycle or honor your claim within a reasonable period of time, contact Vanderhall Motor Works at info@vanderhallusa.com for assistance. If you are not satisfied with the way in which a warranty claim is resolved by Vanderhall Motor Works, you may write directly to:

**Director of Field Operations Support
Division (EI4-397F) Environmental
Protection Agency**
401 M Street, S.W.

California Air Resources Board
9528 Telstar Ave.
El Monte, CA 91731-2990

Emissions Warranty Coverage:

Vanderhall Motor Works warrants to the owner of any 2016 and subsequent model year motorcycle that the motorcycles designed, built and equipped to conform at the time of sale with all

applicable emission standards, and is free from defects in materials and workmanship which would cause it to fail to conform with applicable requirements during the specified time and mileage limits.

This warranty begins on the date the motorcycle is delivered to the first purchaser other than an authorized Vanderhall Motor Works motorcycle dealer, or the date it is first used as a demonstrator, lease, or company motorcycle, whichever comes first and continues for the time and mileage listed below:

Time: 5 years
Mileage: 30,000 km (18,600 miles)

These warranties are given only to the owner of a 2016 and subsequent model year motorcycle distributed by Vanderhall Motor Works.

Emission System warranty Statement (Motorcycle):

To qualify for coverage under the defects warranty you should operate and maintain your motorcycle according to the requirements of the Warranty Booklet, and the Maintenance Schedule in the Owner's Manual. This schedule is designed to keep your motorcycle emission control systems functioning properly by maintaining your motorcycle in peak operating condition. Vanderhall Motor Works will not deny a warranty claim solely because of lack of maintenance records. However, failures caused by unapproved modifications will not be covered by this warranty.

Vanderhall Motor Works recommends that only parts supplied by Vanderhall Motor Works or equivalent parts be used to repair your motorcycle. Maintenance, replacement, or repair of emission control devices and

systems may be done by any motorcycle repair establishment or individual. Vanderhall Motor Works will only pay for warranty repairs performed at an authorized Vanderhall Motor Works motorcycle repair facility (except in an emergency situation). An emergency situation exists when a Vanderhall Motor Works dealership is not reasonably available, a warranted part is not available within 30 days, or when an authorized Vanderhall Motor Works facility is unable to complete a repair within 30 days. In an emergency situation, the repair of emission control devices or system may be done by any motorcycle repair establishment or individual, or by the owner, using any replacement part. Vanderhall Motor Works will reimburse you for those emergency repairs, including diagnosis, covered by the Emissions Warranties. Parts reimbursement is at the manufacturer's

suggested retail price, and labor reimbursement is at a geographically-appropriate hourly labor rate for Vanderhall Motor Works recommended time allowance. For reimbursement, present the replaced parts and a copy of the paid receipt to Vanderhall Motor Works.

The use of replacement parts not equivalent to the original parts may impair the effectiveness of your motorcycle's emissions control systems. If such a replacement part is used in the maintenance or repair of your motorcycle, and an authorized Vanderhall Motor Works dealer determines it is defective or caused a failure of a warranted part, your claim for repair to bring your motorcycle into compliance with applicable standards may be denied. If the part in question is not related to the reason your motorcycle fails to meet the standards, your claim will not be denied.